TAPR Regional Networking Special Interest Group Archive, May 1994 through December 1994

May 1994 through December 1994

TAPR's forum for amateur packet-radio networking, including regional network case studies, interconnection of regional networks, packet-to-Internet gateways, network planning, addressing, routing, and operational experience.

This volume contains 8 original monthly files and 1,172 messages, arranged chronologically. The PDF is a readable access copy: MIME transfer encodings are decoded, HTML bodies are converted to plain text, and non-text attachments are represented by descriptive notes. The raw source text is supplied separately with the Internet Archive item.

Month	Messages	Original source file
1994-05	32	netsig.9405
1994-06	171	netsig.9406
1994-07	246	netsig.9407
1994-08	86	netsig.9408
1994-09	41	netsig.9409
1994-10	162	netsig.9410
1994-11	195	netsig.9411
1994-12	239	netsig.9412

May 1994

Original source file: netsig.9405
Source: http://ftp.tapr.org/tapr_history/SIG_Archives/netsig/mail_archive/netsig.9405

1. Re: Perfect Network...

From: root@dirku.demon.co.uk (Dirk)
Date: Sat, 28 May 1994 10:47:21 +0200 (BST)
To: netsig@tcet.unt.edu (TAPR NETSIG)
Message-ID: <m0q7KzB-0004g3C@dirku>
Rendered body type: text/plain

```
>
> karl k5di@k5di.nm.usa.na writes:-
>
> *** stuff deleted ***
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>       I will discuss the The Net style of switch that evolved or was
> stolen from the Netrom people. This software is run in a tnc-2 and has a
> radio port ...
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In view of the libel case going thru the American courts at the moment
between two scientists, who are fighting over statements made on the
Internet, perhaps it might be better to stop making unsubstantiated
accusations who has stolen what from whom in the Netrom wars.

Thank you

Dirk
g1tlh@gb7tlh.#35.gbr.eu and as above
```

2. Re: RF system Comaparison, D4-10 s vs Cellnet Proto...

From: "Ackermann, John" <jra@lawdept.daytonoh.NCR.COM>
Date: Sat, 28 May 94 08:42:00 edt
To: netsig <ncrhub1!tcet.unt.edu!netsig@dayhub.daytonoh.NCR.COM>
Message-ID: <2DE74903@lawgate.daytonoh.ncr.com>
Rendered body type: text/plain

```
Hi Don --

Well, obviously we continue to disagree.  All I can say is that we've now
got seven sites running, two more about to come on line, one full-duplex
repeater (a second soon to come on line) and a bunch of BBS, DXCluster, and
TCP/IP users on our network, and we haven't paid for any hardline yet.  And
all we use is jacketed stuff, which seems to be in good supply in this part
of the country -- we have at least a thousand feet in stock now, with no
signs of a shortage coming up.  My only point was that your calculation put
an almost grotesque weight on feedline costs, when that's not something that
most groups seem to fret about.

I know you included labor cost in your radio cost, but that doesn't address
the real problem.  It's not labor cost, but labor <availability> that's the
issue.  Unless someone's willing to pay me more than I make at my "real"
job, my time to build is limited.  (By the way, the cost of hanging hardline
isn't linear on the number of runs.  The biggest problem is getting someone
up on the tower in the first place.  Once the fixed setup and climbing time
is factored in, hanging three runs doesn't take nearly three times as long
as hanging one.  We did all the antenna work at a site similar to what
you're describing -- three UHF links at 280, 250, and 150 feet -- in a long
afternoon.)

I'm not really interested in starting an argument over what it costs to do
what, but I felt that since you set out costs that were grossly different we
encountered in building a real, as opposed to a theoretical, site, your
assertions should not go unanswered.

Finally, the D4-10 direct FSK modulation is clearly less spectrally
efficient than other forms.  But it has one big advantage:  you can buy it.
 When a better system is both commercially available and affordable, we'll
start building with it.

John
 --------------------------------
  Hi John. Well, there are costs included with feedlines i left out, too.
Like Installation. And each antenna cost money to install too. Many sites
will
not allow bare 3/4 inch line on the tower, due to bimetalic action, and IMD
```

diode effects in the connectors, and the bimetalic points of contact. So, there is a limited supply of such coax. U did not relate this limitation into
a system cost. That is, there s limited amounts of the plastic coated 3/4s, whereas the 3/4 s bare is common. So, we need to be clear that the 3/4s allot of people think is useful, is not. We have a site here that wont allow anything under 7/8 s heliax with a 50 ohm sized center conductor. The bigger center conductor of the 50 ohm cable has shown to be sufficiently resistant to lightning damage, and anything smaller, not acceptable. The point being that to consider feedline free, even if u get it donated free , is wrong. It still takes three times as long to haul what u need, and install what u need. I used the commercial cost of this cable only for comparison purposes, John. Everything costs something. And needing 3 times as much requires
three times that cost.

On the radio cost, well the time to put it all together was figured into the 2750 cost. 1000 dollars of that cost is for the labor to put it to-0 gether. That s based on the times it took us to make the prototypes. So, no, that cost is already into the comparison. While u have left out the hidden costs of free feedlines in ur comparison.

That is, u have left out the costs of cable labor our of ur comparison, while i did include the costs of radio labor in mine. I did leave out the D4-10 cabling and racking costs too. The D4-10s don t come ready to hook into a rack and controller. THe CELLNET Proto costs did.

More on the cables. While many ham clubs get free or cheap feedline, i ve yet to know of a packet club that has not bought feedline. The free -bees run out from time to time.

The only place where the cable situation does swing back, is in mountainous
terrains. Where cable runs are short.

The D4-10 19k2 modulation is very spectrally inefficient. As the DSY and K9NG modulation are only a fraction apart in spectral effiency, i didn t correct for this in the comparison. With the 19k2 Kantronics, its 2.5 times worse, spectrum wise than the DSY. Again, this can be related to some monetary factor, just like the supply/demand of free 3/4 inch plastic coated cable should have been.

Yes, u can slew the figures to the advantage of the simplex system, if u don t consider all the costs. But sooner or later everything costs something, and the commercial costs of these products is about as rock stable a comparson basis as ur going to get.

73, Don.

3. Re: Perfect Network...

From: Robert Wood <w5robert@blkbox.COM>
Date: Sat, 28 May 1994 16:09:57 -0500 (CDT)
To: TAPR NETSIG <netsig@tcet.unt.edu>
Message-ID: <9405281610.aa21500@blkbox.COM>
Rendered body type: text/plain

>
I believe I said that for.... before also,
I still agree, leave it off the reflector.
But you seem to know about some libel case in the American courts,
really, which , where, et. etc. etc.???
Robert WB5CRG w5robert@blkbox.com
> From: root@dirku.demon.co.uk (Dirk)
> Subject: Re: Perfect Network...
> To: netsig@tcet.unt.edu (TAPR NETSIG)
> Date: Sat, 28 May 1994 10:47:21 +0200 (BST)
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> > karl k5di@k5di.nm.usa.na writes:-
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> accusations who has stolen what from whom in the Netrom wars.
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> Thank you
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> Dirk
> g1tlh@gb7tlh.#35.gbr.eu and as above
>

4. Re: Perfect Network...

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Sat, 28 May 1994 15:53:47 -0600 (MDT)
To: TAPR NETSIG <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9405281525.A25346-0100000@kazak>
Rendered body type: text/plain

On Sat, 28 May 1994, TAPR NETSIG wrote:

> From: root@dirku.demon.co.uk (Dirk)
> Subject: Re: Perfect Network...
> To: netsig@tcet.unt.edu (TAPR NETSIG)
> Date: Sat, 28 May 1994 10:47:21 +0200 (BST)
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> accusations who has stolen what from whom in the Netrom wars.
>
> Thank you
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>
>

        Hi Dirk, well I felt, perhaps wrong, that I should give the
flavor of the dispute that still rages over "netrom". I should perhaps
use the g8bpq switch as the qwintesinal packet switch which is compatable
with netrom but in no way implemented the same way the inventor had done
;ie: no tnc-2 and a different route system. But in fact the FBI could
mount a search worldwide and find perhaps 1,000 nodes with 1 tnc-2 with
some version of TheNet within them. This is not news.

        But it does make it hard to talk about the current setup if you
do not discuss Netrom. I and all of us hope the courts settle this
problem and then we can go forward with less concern. But for the record
I have no information that supports any issue about netrom or TheNet.

73, karl k5di@k5di.nm.usa.na

5. THENET vs NETROM (was Re: Perfect Network...

From: Tim Baggett <wbaggett@NMSU.edu>
Date: Sat, 28 May 1994 19:43:09 -0600 (MDT)
To: TAPR NETSIG <netsig@tcet.unt.edu>
Message-ID: <Pine.3.87.9405281909.A23884-0100000@gauss>
Rendered body type: text/plain

Maybe its just because I'm a carefree college student, but when it comes
to NETROM/THENET legal wars, I couldn't care less about who did or didn't do
what. That is, as far as legality goes.

I'll tell you this much however. I haven't seen any NETROM people trying
to improve their stuff that they were/are(?) selling. It doesn't do IP
routing and doesn't have half the features that THENET does. During the
fall semester I was BEGGING for information regarding how NETROM worked.
I even called their offices. What did I find? NOTHING. THENET information
is out there, ready to be used.

I think we should all apply this problem to our amateur radio networks
when we develope them. This is an experimental hobby and we (hams) like

to fix or improve things. If you base a network around something that you
cannot get information for, cannot fix, cannot change, and above all you
pay for it I can see why everything collapses. I think this is a primary
reasonn why THENET is being used so much - it is versatile, and you can
find information on it. A very good example is Phil Karns NOS. Wow,
imagine what TCP/IP would be like if he kept all his work hidden (NO
JNOS, TNOS, **NOS). Those that use TCP/IP would, IMHO, be many years
behind what they're doing right now.

So, to make my point again, I don't care who did what, just give me
something to work and build a network with! You can buy a new car, get a
repair manual and other docs, and modify/improve your car, so why not
protocols?!

73
Tim

(Heck, let them sue me. All they're gonna get is a pile of student loans,
hihi!)

****
Tim Baggett, AA5DF   Electrical Engineering Student
                                      New Mexico State University
Internet: WBAGGETT@NMSU.EDU
AMPR: AA5DF@NMSUGW.AMPR.ORG   US Snail: 1805 Rentfrow Apt #1
(When on) AA5DF.AMPR.ORG   Las Cruces, NM 88001
****

6. RF system Comparison, D4-10 s vs Cellnet Proto ...

From: wb9mjn@uugate.wa7slg.ampr.org
Date: Sat, 28 May 94 19:42:18 mdt
To: netsig@tcet.unt.edu
Message-ID: <80572@uugate.wa7slg.ampr.org>
Rendered body type: text/plain

Yep, we continue to disagree.

  But here s one thing for sure, a Duplexor takes an hour to tune. But there s
no way to put on the 4 heliax connectors of the 2 extra lines in that time.
Let alone sealing them up the two antenna ends, hanging off the tower.

  Well, i don t think if we did the footwork here, to put together 1000 dollar
9600 baud stations on 220, u would even have the D4-10s. And u would be re-
building MITREKs for 9600, instead of the the D4-10.

  In my comparison, i also left out protection commonly needed on the simplex
station feedlines against lighting and strong out of band signals. That is
a resonant cavity filter. These are about 100 dollars for 440. There s 300
dollars of more disadvantage, for the simplex system. In the CELLNET this
protection is provided by the duplexor, already.

  There are intangible disadvantages to the Simplex system too. 3 antennas
may not be permitted at a site, denying u the site altogether. The IMD
enviorment at a busy site may not be able to handle the 3 transmitters, but
one additional UHF transmitter can be fit in. A site on high ground , with
a shorter tower might not have sufficient spacing between antennas to isolate
the simplex stations, requiring multi band transport links. We have to do this
in the Chicago area all the time. U eventually run out of bands, and may not
then be able to have a reliable UHF access system, due to interferance from
and two the transport systems also on UHF. In the CELLNET system, u just add
recievers, all protected from other UHF stations by the duplexor, besides
the transport transmitter. Another problem with the Simplex system, is that
to be able to afford the 3 antennas, they are usually cheap, and yagis. The
Yagi is a lousy antenna in weather. Even slight iceing causes its phasing to
be screwed up, reducing its gain to that of a dipole, and worse a dipole with
RF absorbing ice all over it. A multi bay omni derives its gain from the physical
position of hte radiators, and the phasing inherent in the weather sealed
special cabling to the radiators. Thus the loss of gain in iceing is much
less. Its not uncommon to see Yagi to Yagi paths completely disapear for
a week or two here, until the ice is melted by sun, where a multi bay, to
multi bay path limps along acceptably. Using multi bay antennas in a simplex
system would be extremely expensive, of course. Again, the CELLNET having
fewer of the EXPENSIVE things, allows the system critical things to be
top quality, for the same system cost.

  Now its not like i haven t thought like this in the past, John. But,
the practicalities below 1 Ghz make things different. Above 1 Ghz, point to
point will be the way to go. For example the 500 dollar, or so, DF9IC
full duplex 64 KB station. Its so much cheaper, because the duplexor has

so much less metal, the fraction of the spacing between tx and rx is more, and the power can be lower. The power can be lower, because the paths the radios are intended for have first fresnel clearance, and about 20 dB less loss, over grazing paths which are the norm for Ham Transport on UHF and lower. (Yes i know higher freqs have higher path loss, but this is offset by antenna gain). At 1.2 gigs, there much less commercial activity, and the duplexor is enuf reciever protection. In the CELLNET proto, the spacing was 8 Mhz, and this neccessitated using (that is rebuilding) a Motorola front end filtering assembly, and exciter filter. The exciter filter was also neccessary due to the linear WA4DSY modulator. The straight K9NG non-linear modulation scheme used in the DF9IC allows its tx sidebands to be much lower. Oops, make that tx noise sidebands. In the midwest, the first fresnel paths are going to be short, 10 to 15 miles. So, to cover the same area, the costs are not that much different between in and the UHF CELLNET, unless ur covering a high population area, and have to have as many access points as 10 to 15 miles node spacing would have available. But across the farm-lands, UHF CELLNET is still the best bargain, we can actually do, now. In Europe UHF CELLNET would be dumb. People live in high density areas, or there are mountains, and the paths can be made long where there are few people (in the mountains). But in the midwest, we have rural areas where there are fewer people, and NO mountains.

I think TAPR should support the marketing of the DF9IC stuff in the US. Its useful for high population area, and areas with mountains. That s probably 2/3s of the TAPR membership. Altho there areas in the west where the FAA surveilance Radars would make the DF9IC useless.

73, Don.

7. Re: RF system Comparison, D4-10 s vs Cellnet Proto ...

From: DJ Gregor <dgregor@bronze.coil.com>
Date: Sat, 28 May 1994 23:54:44 -0400 (EDT)
To: netsig@tcet.unt.edu (TAPR NETSIG)
Message-ID: <199405290354.XAA05996@bronze.coil.com>
Rendered body type: text/plain

Enough arguments!!!!!

The main difference between the USE of the D4-10's and the CELLNET that I see is network maturaty/age. John (ag9v) uses the D4-10's in his network because they are a fairly inexpensive setup and that is all that they need at that point. Also, John, like many of the network builders that I know locally in Columbus, is very busy. He is can go out and buy some D4-10's and put them up without having to assemble a kit. He gets the cable for free, and does not have any problems using towers with multiple antennas.

Don uses CELLNET in his local network because, in his situation, they are a better choice. In his network they need the speed of full-duplex 56kb/sec. and has the time to build the eqiupment. He needs to have the single antenna solution becuase of his restrictions on feedline.

Because of these differnces in ease of building, feedline availability, and speed needs, network builders in a certain area would choose one or another based on those criteria, probably not because of price.

DJ - n8qlb
dgregor@bronze.coil.com

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DJ - n8qlb
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9. Re: RF system Comparison, D4-10 s vs Cellnet Proto ...

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DJ - n8qlb
dgregor@bronze.coil.com

10. Yes I know

From: gjones (Greg Jones)
Date: Sun, 29 May 94 3:10:27 CDT
To: netsig
Message-ID: <9405290810.AA198282@tcet.unt.edu>
Rendered body type: text/plain

Yes, no need to mail me. The system sent out several Bounced message.
Please just delete them and don't respond to me or the server about
them.

If you have a problem getting additional mail in error - then all I can
suggest is that you unjoin from the group. sorry - but this is all I
recommend to the several that have sent messages about this problem.

This wouldn't have happened this time if I had left well enough alone with
the code - but like any hacker - I kept playing.

sorry.

cheers - Greg
--

11. Re: THENET vs NETROM (was Re: Perfect Network...

From: Greg Jones <gjones@tenet.edu>
Date: Sun, 29 May 1994 04:28:44 -0500 (CDT)
To: netsig@tcet.unt.edu (TAPR NETSIG)
Message-ID: <199405290928.EAA13394@Kay-Abernathy.tenet.edu>
Rendered body type: text/plain

> From: Tim Baggett <wbaggett@NMSU.edu>
> Subject: THENET vs NETROM (was Re: Perfect Network...
> Date: Sat, 28 May 1994 19:43:09 -0600 (MDT)
>
> Maybe its just because I'm a carefree college student, but when it comes
> to NETROM/THENET legal wars, I couldn't care less about who did or didn't do
> what. That is, as far as legality goes.
>

Well, we should care a lot. Copyright laws are very important and I personally believe that amateurs are some of the worse offenders around. Copyright ethics are something most amateurs are pretty uneducated on. I can recommend a good book, costs all of $1.70. "What Educators Should Know About Copyright" by Virgina M Helms. Phi Delta Kappa. 1986. ISBN 0-87367-233-X. I use this in one of my courses....even though it is for educators it is an excellent, very short, to the point about it all. For those who like short-attention-span-thearter :-) You can read it in less than 30 minutes, and sound almost as good as a lawyer :-)

As for the NETROM/THENET debate. That is old history. Something would have happened 4 years ago between Software 2000 and Nord><Link. I would think we can all do without a new NETROM/THENET debate. There was enough of that in 88-89. If you don't know the story - there are several articles about the allegations, facts, and a response from NORD><LINK in Issue #35, June 89 of the TAPR Packet Status Register (PSR). That would be Vol II of the Old TAPR PSR set. This all happened before I was an officer of TAPR, to my luck, since from what I understand this was a very difficult issue for TAPR at the time.

I think that a lot of people learned from this very bad situation about how they release their software into the amateur community, if at all.

Cheers - Greg

12. Re: RF system Comparison, D4-10 s vs Cellnet Proto ...

From: "Ackermann, John" <jra@lawdept.daytonoh.NCR.COM>
Date: Sun, 29 May 94 06:17:00 edt
To: netsig <ncrhub1!tcet.unt.edu!netsig@dayhub.daytonoh.NCR.COM>
Message-ID: <2DE87A04@lawgate.daytonoh.ncr.com>
Rendered body type: text/plain

Good summary, DJ!

John

>From: DJ Gregor <dgregor@bronze.coil.com>
>Subject: Re: RF system Comparison, D4-10 s vs Cellnet Proto ...
>To: netsig@tcet.unt.edu (TAPR NETSIG)
>Date: Sat, 28 May 1994 23:54:44 -0400 (EDT)

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>Because of these differnces in ease of building, feedline availability, and >speed needs, network builders in a certain area would choose one or another >based on those criteria, probably not because of price.

13. Free or For Fee?

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Sun, 29 May 1994 07:40:07 -0600 (MDT)
To: TAPR NETSIG <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9405290725.A212-0100000@kazak>
Rendered body type: text/plain

I am amazed by the mis-information held by many hams that use packet radio. They assume the packet nodes are put up by the Federal or State Agency and are free. In fact they are not free. Someone paid their own money to build the node. In some cases there is an informal group that share the cost and work. But always some one paid, and is still paying to keep the node working.

        I have 3 nodes that I own and keep running. One of the busiest is here at my home. It is the "gateway" from NM to El Paso, TX. It is on this computer I am typing on now. It is a g8bpq node that has 2 1200 baud

ports and 1 9600 baud port. The 9600 baud goes to El Paso.

        These nodes are available to anyone that wants to get on the right frequency and use them. They appear to be free nodes since no-where do I say "attention! Please remit to k5di the sum of $25.00 in the month of November (my birth month) or I will lock you out of my nodes".

        But should we not do something like this? I think at least it should be discussed. Hams must support the ham satellites or there would be none. Perhaps if we hams expect to have a network we should pay in advance for it.

        My out of pocket cost to keep the 3 nodes running breaks down like this:

        1. Transportation: Since the mountain sites are on mountain tops you need a 4 wheel drive vehical to get there. I made 5 trips to sites this year. Each trip cost $25.00 in direct fuel cost. Each trip cost $45.00 in tire wear. Each trip cost an estimated $35.00 for maintinence of wear caused by the trip. So I have donated $105.00 per trip and so far $525.00 this year.

        2. Equipment: This year I bought 3 TEKK radios $285.00 and a 9600 baud modem $85.00 and provded 3 tnc's worth $300.00. I need to buy 2 more modems and 2 dual band antenna's with duplexers. But I don't have the money. So what we need won't happen. Total this year $670.00.

        There are site costs and some part of this 486DX66 computer is getting worn out by the node...hi

        The bottom line is that now we have a network of sorts only because a lot of hams are willing to GIVE money to other hams so they will enjoy packet radio. Would not a system of fees be a better way to do things? Then perhaps the 9600 baud links would be put up and sustain 9600 baud by using both the current 2 meter and a new 440 MHz frequencies...

-k5di@k5di.nm.usa.na

14. Re: Free or For

From: Bob Wilkins <rwilkins@ccnet.com>
Date: Sun, 29 May 1994 12:52:48 -0700 (PDT)
To: TAPR NETSIG <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9405291231.C15063-0100000@ccnet>
Rendered body type: text/plain

On Sun, 29 May 1994, TAPR NETSIG wrote:

> From: Klarsen <klarsen@acca.nmsu.edu>
> Subject: Free or For Fee?
> To: TAPR NETSIG <netsig@tcet.unt.edu>
> Date: Sun, 29 May 1994 07:40:07 -0600 (MDT)
>
>   The bottom line is that now we have a network of sorts only
> because a lot of hams are willing to GIVE money to other hams so they
> will enjoy packet radio. Would not a system of fees be a better way to do
> things? Then perhaps the 9600 baud links would be put up and sustain 9600
> baud by using both the current 2 meter and a new 440 MHz frequencies...
>
> -k5di@k5di.nm.usa.na

There is a difference between giving money and providing a service to amateurs. If you think that amateurs will give you money each time they use your service, you will be drummed off the hilltops and replaced by some other service provider. Why not go to your local clubs and give a demonstration and talk up the need for newer equipment. Most hams will donate to a new equipment fund, but resist the monthly fees. Write articles for the club newsletters explaining the costs involved with your system. Once your locals are educated they will support your service.

How many of the private common carriers that have voice networks in the Amateur bands do you support?

Bob   n6fri

     Bob Wilkins   work   bwilkins@cave.org
 Berkeley, California   home   rwilkins@ccnet.com
     94701-0710   play   n6fri@n6eeg.#nocal.ca.usa.noam

15. Re: Free or For(FEE)

From: Robert Wood <w5robert@blkbox.COM>
Date: Sun, 29 May 1994 14:52:05 -0500 (CDT)
To: TAPR NETSIG <netsig@tcet.unt.edu>
Message-ID: <9405291452.aa15113@blkbox.COM>
Rendered body type: text/plain

I'm not too sure about the fee thing.
Perhaps we suhould charge by the byte of mail sent.
and then we should mail out a bill for each qso via a sat. qso.
and for each DX-expedition qso we could bill.
and if you copy te the w1aw bullentin, send in a fee...
oh, yes Dx-clusters charge them by the spot.

Fees, I don't think so. Nor do I think it's proper or right for
ANY HAM OPERATOR TO ASK ANOTHER FOR A DONATION to support his hobby.
If we go in togeterh as a group or club to put up a node, good for us
(or cluster node), but other than that, it's one guys stuff.

73's Robert WB5CRG

---

16. Re: THENET vs NETROM (was Re: Perfect Network...

From: mwestfal@iris.csci.csusb.edu (Michael Westfall)
Date: Sun, 29 May 1994 12:06:07 -0700 (PDT)
To: netsig@tcet.unt.edu (TAPR NETSIG)
Message-ID: <9405291906.AA21686@iris.csci.csusb.edu>
Rendered body type: text/plain

-> > From: Tim Baggett <wbaggett@NMSU.edu>
-> >
-> > Maybe its just because I'm a carefree college student, but when it comes
-> > to NETROM/THENET legal wars, I couldn't care less about who did or didn't
-> > do what. That is, as far as legality goes.
->
-> Well, we should care a lot. Copyright laws are very important and I
-> personally believe that amateurs are some of the worse offenders around.
-> Copyright ethics are something most amateurs are pretty uneducated on.

Hams are hackers. In his book "Hackers: Heroes of the computer Revolution",
Steven Levy gives the Hacker Ethic. Let me quote a couple of the
pertinent points:

1) Access to computers -- and anything which might teach you something
       about the way the world works -- should be unlimited and total.
       Always yeild to the hands-on imperative!

2) All information should be free.

The Net/Rom people should have known about the above. Although they
had (still have?) the right to copyright and keep their stuff secret,
they shouldn't have done so. They violated the Hacker Ethic. Packet
radio was and still is a highly experimental and hack-oriented
activity. Those who engage in it are experimenters and hobbyists,
who (for the most part, I hope!) are working together to continually
improve the network. Those who would try to make money directly off the
Experiment (Software 2000, e.g.) are outsiders and Ravenous Wolves.
IMHO, the proper way to make money from the Experiment is to apply the
technology to commercial applications.

----
73 de Mike,   ax.25net: N6KUY@W6JBT.#SOCA.CA.USA.NA
                  amprnet: n6kuy@n6kuy.ampr.org [44.18.0.49]
                 internet :   mwestfal@silicon.csci.csusb.edu
            "Old MacDonald had a farm, dit didit dit didit dahdahdah."
GCS/M { -d+ p+ c++ l u++ e+(*) m++(-) s/+ !n-(---) h-- !f g+ w+ t++ r-(--) y+ }

---

17. Re: Free or For

From: mwestfal@iris.csci.csusb.edu (Michael Westfall)
Date: Sun, 29 May 1994 12:18:23 -0700 (PDT)
To: netsig@tcet.unt.edu (TAPR NETSIG)
Message-ID: <9405291918.AA21701@iris.csci.csusb.edu>
Rendered body type: text/plain

-> From: Klarsen <klarsen@acca.nmsu.edu>
-> Subject: Free or For Fee?
->
->
-> ... These nodes are available to anyone that wants to get on the
-> right frequency and use them. They appear to be free nodes since no-where
-> do I say "attention! Please remit to k5di the sum of $25.00 in the month
-> of November (my birth month) or I will lock you out of my nodes".
->
->   But should we not do something like this? I think at least it
-> should be discussed. Hams must support the ham satellites or there would
-> be none. Perhaps if we hams expect to have a network we should pay in
-> advance for it.

It might not hurt to ask for donations, but I don't like the idea of
"pay up or get locked out!"

----
73 de Mike,   ax.25net: N6KUY@W6JBT.#SOCA.CA.USA.NA
                  amprnet: n6kuy@n6kuy.ampr.org [44.18.0.49]
                 internet :   mwestfal@silicon.csci.csusb.edu
            "Old MacDonald had a farm, dit didit dit didit dahdahdah."
GCS/M { -d+ p+ c++ l u++ e+(*) m++(-) s/+ !n-(---) h-- !f g+ w+ t++ r-(--) y+ }
----

18. RE: Free or For

From: "Ackermann, John" <jra@lawdept.daytonoh.NCR.COM>
Date: Sun, 29 May 94 16:35:00 edt
To: netsig <ncrhub1!tcet.unt.edu!netsig@dayhub.daytonoh.NCR.COM>
Message-ID: <2DE907CB@lawgate.daytonoh.ncr.com>
Rendered body type: text/plain

>From: Klarsen <klarsen@acca.nmsu.edu>
>Subject: Free or For Fee?
>To: TAPR NETSIG <netsig@tcet.unt.edu>
>Date: Sun, 29 May 1994 07:40:07 -0600 (MDT)

>[an unfortunately familiar story deleted]

>   The bottom line is that now we have a network of sorts only
>because a lot of hams are willing to GIVE money to other hams so they
>will enjoy packet radio. Would not a system of fees be a better way to do
>things? Then perhaps the 9600 baud links would be put up and sustain 9600
>baud by using both the current 2 meter and a new 440 MHz frequencies...

Boy, Karl, nothing like jumping right into it. :-}

You're absolutely right -- people think that what there is of the packet
network just appeared from Heaven one day.

I dunno the answer. Our group is totally tapped out right now -- we had a
fairly nice treasury at one point, but in the last four years have bought
three new voice repeaters and paid for a large part of the 19.2 network.
 (Other "investors" in the network -- clubs but mainly individuals -- have
put in a few grand of their own, too). At the moment, we're just about
covering operating expenses if we add another ten or fifteen members, so
there's going to be no more club-funded packet stuff until we find a source
of revenue.

Since we make a pretty good public-service argument, we're just now starting
the tack of looking to local foundations for a grant or two. We did this
twenty years ago (in the aftermath of the Xenia tornado, where our group did
<lots> of emergency communcation) and wound up with three brandly new GE
commercial repeaters out of it. We're going to see if it'll work again...

John

19. Re: Free or For(FEE)

From: Tim Baggett <wbaggett@NMSU.edu>
Date: Sun, 29 May 1994 22:36:43 -0600 (MDT)
To: TAPR NETSIG <netsig@tcet.unt.edu>
Message-ID: <Pine.3.87.9405292243.B28567-0100000@gauss>
Rendered body type: text/plain

On Sun, 29 May 1994, TAPR NETSIG wrote:

> From: Robert Wood <w5robert@blkbox.COM>

> Subject: Re: Free or For(FEE)
> To: TAPR NETSIG <netsig@tcet.unt.edu>
> Date: Sun, 29 May 1994 14:52:05 -0500 (CDT)
>
>
> I'm not too sure about the fee thing.
> Perhaps we suhould charge by the byte of mail sent.
> and then we should mail out a bill for each qso via a sat. qso.
> and for each DX-expedition qso we could bill.
> and if you copy te the w1aw bullentin, send in a fee...
> oh, yes Dx-clusters charge them by the spot.
>

Hey! I like this idea! Wow, with all the work I've put into the gateway
here (NMSUGW) and with over 520 users logging on since August, boy, I
could pay for school! :-)

For network stuff that NM State Univ radio club (ok I) have assembled,
including the gateway, has been funded through the University as an
educational tool. The rest has been provided by myself (mostly time, and
lots of it!) and a few donations from users. I think just asking for
donations to support a good cause works well. However, I would beware the
politics. One of the worries that I've had is accepting a donation and
then having the person expect certain services. I do the best I can to
provide as many services as I can to all users, but I do make it clear
that there is no guarantee on anything.

73
Tim

****
Tim Baggett, AA5DF   Electrical Engineering Student
                                      New Mexico State University
Internet: WBAGGETT@NMSU.EDU
AMPR: AA5DF@NMSUGW.AMPR.ORG   US Snail: 1805 Rentfrow Apt #1
(When on) AA5DF.AMPR.ORG   Las Cruces, NM 88001
****

20. RE: Free or For(FEE)

From: jra1854@tntech.edu (Jeffrey Austen)
Date: Mon, 30 May 1994 09:10:20 -0600
To: netsig@tcet.unt.edu (TAPR NETSIG)
Message-ID: <01HCY128PDV69PM1OO@tntech.edu>
Rendered body type: text/plain

This is probably the biggest non-technical problem facing packet radio.

Packet is really not very much different than a voice repeater so we should
look to the repeater clubs and see how they finance their systems. I see
three models:
 - closed repeaters - you must be a member to use it
 - open repeaters with closed options (e.g. autopatch) - you must be a
   member to use the options
 - open repeaters - free for all to use

The open repeater model seems to work only when there is a fairly large pool
of people to support it (maybe when the freeloader to payer ratio is below
a certain amount?) which usually means a fairly large club.

Right now packet uses the open model and we're suffering for it. Too few
people support many non-supporting users. I see two options:
 - get the largest club or consortium of clubs in an area to support packet
 - consider value added services like high-speed access, access to links,
   extended BBS access, etc., which would be available only to paying members

Jeff, k9ja

+-+
Jeffrey Austen | Tennessee Technological University
jra1854@tntech.edu | Box 5004
(615) 372-3485 | Cookeville Tennessee 38505   U.S.A.

21. Re: Free or For(FEE)

From: dwolf (Dave Wolf)
Date: Mon, 30 May 94 12:07:47 CDT
To: netsig@tcet (TAPR NETSIG)
Message-ID: <9405301707.AA131039@tcet.unt.edu>
Rendered body type: text/plain

Just a quickie personal observation:

Whenever I have accepted ANYTHING from a user of the BBS/node system
(even someone who I've considered a 'bud'), and NEVER cash, there arises
an unspoken obligatory compact. It's bad enough being hounded by
someone during dinner (how they get my unlisted number is beyond me)
complaining that 'my' repeater is down (it isn't mine, I just 'use' it and I DO
support it) who has never offered to contribute a penny or a coax
connector.

Between individuals, there is a natural expectation that arises from
consideration; guess it's human nature. Seems to be greatly reduced
when there is the buffer of an organization.

73, Dave WO5H

22. ROSE & TCP/IP (was: Re: Perfect Network...)

From: kb7uv@panix.com (Andrew Funk)
Date: Mon, 30 May 1994 14:13:34 -0400
To: netsig@tcet.unt.edu (TAPR NETSIG)
Message-ID: <199405301813.AA23184@panix.com>
Rendered body type: text/plain

>From: Tim Baggett <wbaggett@NMSU.edu>
>Subject: Re: Perfect Network...

>I think AX.25 is the only protocol that the FCC allows us to use.

For passing third-party traffic under automatic control, yup!

>If
>you're talking about higher level protocols, then it all looks like data
>to AX.25 anyway. For networking protocols I think we DESPERATLY need a
>new protocol. Somthing between TCP/IP and ROSE. Virtual Circuit connects,
>low overhead, and has a network management protocol.

Why not simply use TCP/IP over ROSE? I understand that KO4KS has been
highly successful with this. (I plan to do some experients myself, but
haven't had any time!)

Tom Moulton, W2VY, is adding a new feature to ROSE which we hope will appeal
to TCP/IP users -- the ability to transport UI frames across the network.
The ROSE Network will setup a Virtual Circuit to pass the first UI frame,
and leave the VC up until a timer expires. All further UI frames across
that path will travel, as far as ROSE is concerned, along that VC. However,
to the outside world (TCP/IP users, and others) it will appear that the
network is passing unconnected UI frames (datagrams).

If anyone has comments for this (and other) ROSE development, Tom Moulton
can be reached via the Internet as w2vy@ram.com. Or, send me email and I'll
relay.

In addition, there is a ROSE-specific mailing list:
                rose@kb2ear.overleaf.com.

>
>When thinking of network protocols that the users themselves don't
>access,

I'd like to see the underlying networking be totally end-to-end, including
users whenever possible. This was first pioneered by Phil, KA9Q, with
TCP/IP, and is extremely successful. ROSE was designed with a similar goal,
but with the concept of level-3 TNCs with internal ROSE. So far this is an
unrealized goal, but perhaps in the future...

73, Andy
--
Andrew Funk, KB7UV
ENG Editor -- Microwave Control
WCBS-TV Channel 2 News, New York

23. Fee Thoughts

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Mon, 30 May 1994 16:03:52 -0600 (MDT)
To: Sig Networking <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9405301520.A15152-0100000@kazak>

Rendered body type: text/plain

Since I entered the thought process on free or fee mant ideas have come forth. I do agree that there are many pit-falls in the path to obtaining funds for packet networks, but it is more than ever clear that the current one man puts up all he can approach will not get it done.

I think the idea of a club is good. You need to have an organization people can trust will use the money they provide on the network not a personal purchase. So the question is how big should this club be? I suspect it should be as big as the area to be served by the network. Here in the mountain zone the area is HUGE but the number of hams is small. There was a lot of mail last winter from Utah about a state grant of like $50,000.00 to build a packet network from north to south in Utah. In this case the money was given to the state university to spend wisely.

So with the organization in place how do you get money? Members of the club are interested so they should pay dues. The dues in turn are spent for the network. But how can you as a packet ham get other established clubs to help? How about introducing a "packet special interest group" into existing clubs? The SIG provides a program several times a year and the club helps the packet network.

Well it's the last day of the holiday weekend and about all I am willing to do. But it seems to me we must be active in tracking down money for our network or there will be none.

73, karl k5di

24. Re: Perfect Network...

From: djk@dirku.demon.co.uk (Dirk-Jan Koopman)
Date: Sun, 29 May 1994 23:47:42 +0200 (BST)
To: netsig@tcet.unt.edu (TAPR NETSIG)
Message-ID: <m0q7tdu-0004g9C@dirku>
Rendered body type: text/plain

>
> From: Robert Wood <w5robert@blkbox.COM>
> >
> I believe I said that for.... before also,
> I still agree, leave it off the reflector.
> But you seem to know about some libel case in the American courts,
> really, which , where, et. etc. etc.???

The exact names etc I cannot recall (as I can't find last week's New Scientist (a UK publication of the same ilk as Nature or Scientific American albeit weekly and in a more tabloid style)). The gist of the story is that an American Scientist is alleged to have defamed another American Scientist in a rather extreme manner on the Internet - the alleged defamed one has, apparently, issued writs for libel.

This has received some publicity on the Internet and elsewhere and is currently (probably) going be used a stick to beat us with here in the UK so that we have restricted access to all this free, uncensored discussion 'cos we might see the real quality of our politicians (or is it civil servants!). As an aside (and I know it isn't relevant to this group) but the issue of 'pornography' and, more relevant, 'copyright' material being freely exchanged is another stick which will be used, here at least, RSN.

Dirk

25. Proposed "Call for Papers" for Networking Book

From: "Ackermann, John" <jra@lawdept.daytonoh.NCR.COM>
Date: Tue, 31 May 94 10:05:00 edt
To: 'NETSIG Mailing List' <netsig@tcet.unt.edu>
Cc: "'jra at ag9v'" <jra@ag9v.ampr.org>
Message-ID: <2DEB4516@lawgate.daytonoh.ncr.com>
Rendered body type: text/plain

You may recall that one of the four goals for NetSIG is the creation of a networking resource guide. I've volunteered to edit such a beast, and following is a proposed outline/table of contents -- it's also a call for papers, because I don't plan to write the whole thing myself!

I'm interested in comments on this draft. After feedback from the mailing list, I will repost a formal call for papers here, on some of the other mailing lists, on rec.radio.amateur.digital.misc., and on the packet

network.

My target is to have the book in the hands of TAPR for publication by the
end of the year.

John

The TAPR Networking Guide
Proposed Outline

I.   Introduction

II. Fundamentals of Networking
     a.   Why Network?
     b.   The Realities of RF
     c.   Hidden Transmitter/Exposed Terminal Syndromes
     d.   Network Definitions and Topologies

III. The Politics of Networking
     a.   Who Are We Doing This For?
     b.   Inter- and Intra- Group Cooperation
     c.   Finding Funds
     d.   Finding Sites
     e.   Designing for Growth

IV. Network Protocols -- A Summary
     a.   The Digipeater (and why it doesn't work)
     b.   NetROM and Related Protocols
     c.   ROSE
     d.   TexNet
     e.   TCP/IP
     f.   New Ideas (CellNet?)

V.   Network Protocols -- Configuration and Tuning
(note: these may be some lengthy papers!)
     a.   NetROM and Related Protocols
     b.   ROSE
     c.   TexNet
     d.   TCP/IP

VI. Modems and Radios
(note: some of these may be long, too)
     a.   1200 baud -- DCD performance, deviation levels
     b.   4800 baud -- Using the HAPN modem
     c.   9600 baud -- Description and hints about the various modems
     d.   Modifying Radios for 9600 baud (Mike Curtis' article, plus
additions?)
     e.   19.2kB -- Info and hints on the D4-10
     f.   56kB -- Info on the GRAPES modem
     g.   Higher speeds (10GHz?)

VII Packet Repeaters
     a.   Why?
     b.   Bit Regenerators

VIII.   Network Success Stories
(note: these are in random order, and we want to include as many as
possible -- limited only by the writeups we receive)
     a.   NEDA
     b.   GRAPES
     c.   Ottawa
     d.   SW Ohio
     e.   ???

Appendixes
     a.   Glossary
     b.   Path Loss/LOS/Power Budget Calculations
     c.   ???

26. ROSE: Latest from W2VY

From: kb7uv@panix.com (Andrew Funk)
Date: Tue, 31 May 1994 12:01:16 -0400
To: netsig@tcet.unt.edu (TAPR NETSIG)
Message-ID: <199405311601.AA06490@panix.com>
Rendered body type: text/plain

Reply-To: tmoulton@smtplink.ram.com
Date: Tue, 31 May 94 07:04:02 EST

>From: tmoulton@smtplink.ram.com
To: uucp@Princeton.EDU
Cc: rose@kb2ear.overleaf.com
Subject: re: ROSE & IP discussion on TAPR Mailing List

Andy, Please forward this...

In the next release of ROSE (version 3.5) there will be a major enhancement for
TCP/IP users. Users will be able to send datagrams of any size using the ax25
fragmentation provided by NOS in VC mode. You could send a 10k datagram and
only have one set of ip and tcp headers.

Also remember that the "TCP/IP" support is really support for any protocol that
uses AX.25 as the link layer.

--
Andrew Funk, KB7UV
ENG Editor -- Microwave Control
WCBS-TV Channel 2 News, New York

27. NETROM Marketing (was Re: THENET vs NETROM)

From: bob@ke9yq.ampr.org (Bob Van Valzah, ke9yq)
Date: Tue, 31 May 1994 13:14:55 -0500
To: netsig@tcet.unt.edu (TAPR NETSIG)
Message-ID: <aa1129ec04021014d9c0@[192.35.52.200]>
Rendered body type: text/plain

>From: mwestfal@iris.csci.csusb.edu (Michael Westfall)
>Subject: Re: THENET vs NETROM (was Re: Perfect Network...
>Date: Sun, 29 May 1994 12:06:07 -0700 (PDT)
>
>The Net/Rom people should have known about the above. Although they
>had (still have?) the right to copyright and keep their stuff secret,
>they shouldn't have done so. They violated the Hacker Ethic.

I think we can agree that they didn't know their market, but my perspective
is different from yours (perhaps because I make my living selling
intellectual property).

Considering that their market may we'll've been best described by the term
"hacker," I'd've suggeted a business plan that gave away (i.e. made public)
the specs for the protocol and then planned a series of implementations
with ever increasing functionality over time. You make money because users
value your work and want to run your latest stuff (even if there may be
public domain re-implementations of earlier versions). You also make money
because users want your support services (e.g. phone support, bug fixes,
subscription upgrade service, etc.).

73, Bob, ke9yq

28. Re: Perfect Network...

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Tue, 31 May 1994 16:23:43 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9405311623.A26268-0100000@kazak>
Rendered body type: text/plain

On Tue, 31 May 1994, TAPR Network Special Interest Group wrote:

> From: djk@dirku.demon.co.uk (Dirk-Jan Koopman)
> Subject: Re: Perfect Network...
> To: netsig@tcet.unt.edu (TAPR NETSIG)
> Date: Sun, 29 May 1994 23:47:42 +0200 (BST)
>
> >
> > From: Robert Wood <w5robert@blkbox.COM>
> > >
> > I believe I said that for.... before also,
> > I still agree, leave it off the reflector.
> > But you seem to know about some libel case in the American courts,
> > really, which , where, et. etc. etc.???
>
> The exact names etc I cannot recall (as I can't find last week's New
> Scientist (a UK publication of the same ilk as Nature or Scientific
> American albeit weekly and in a more tabloid style)). The gist of the
> story is that an American Scientist is alleged to have defamed another

> American Scientist in a rather extreme manner on the Internet - the
> alleged defamed one has, apparently, issued writs for libel.

        Well then, this case your concerned about can not have a thing to
do with Netrom. The issue was whether NordLink in Germany had copied the
stuff from Software 2,000 in the USA. So the current stuff must be over
another issue.

>
> This has received some publicity on the Internet and elsewhere and is
> currently (probably) going be used a stick to beat us with here in the
> UK so that w
        As an American I don't see how a disagreement between 2 US guys
will have have a thing to do with your access to the internet.

e have restricted access to all this free, uncensored
> discussion 'cos we might see the real quality of our politicians (or is
> it civil servants!). As an aside (and I know it isn't relevant to this
> group) but the issue of 'pornography' and, more relevant, 'copyright'
> material being freely exchanged is another stick which will be used,
> here at least, RSN.
>
> Dirk
>
        Dirk, let me say in the kindest way that you may be making much
more out of this than you should. You alarmed me last week by saying it
was a Netrom dispute, and now it seems that is not the case. So lets drop
the entire thing.

73, karl k5di

>
>

29. Re: NETROM Marketing (was Re: THENET vs NETROM)

From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
Date: Tue, 31 May 94 15:59:49 PDT
To: netsig@tcet.unt.edu
Message-ID: <9405312259.AA03796@hanko.MENTORG.COM>
Rendered body type: text/plain

>
> From: bob@ke9yq.ampr.org (Bob Van Valzah, ke9yq)
> Subject: NETROM Marketing (was Re: THENET vs NETROM)
> To: netsig@tcet.unt.edu (TAPR NETSIG)
> Date: Tue, 31 May 1994 13:14:55 -0500
>
> >From: mwestfal@iris.csci.csusb.edu (Michael Westfall)
> >Subject: Re: THENET vs NETROM (was Re: Perfect Network...
> >Date: Sun, 29 May 1994 12:06:07 -0700 (PDT)
> >
> >The Net/Rom people should have known about the above. Although they
> >had (still have?) the right to copyright and keep their stuff secret,
> >they shouldn't have done so. They violated the Hacker Ethic.
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> "hacker," I'd've suggeted a business plan that gave away (i.e. made public)
> the specs for the protocol and then planned a series of implementations
> with ever increasing functionality over time. You make money because users
> value your work and want to run your latest stuff (even if there may be
> public domain re-implementations of earlier versions). You also make money
> because users want your support services (e.g. phone support, bug fixes,
> subscription upgrade service, etc.).

Just as a point of "interesting historical information" ...
when the NET/ROM vs. TheNet fiasco started, I volunteered to look at
both source codes and render an opinion ... and also look at both object
codes and render another opinion. Did so. Does not matter what that
opinion was, since S-2000 did not persue the matter further.

However, at that time I had an interesting discussion with the S-2000
folks, suggesting their best defense might be to rapidly release improvements
to the protocol, so as to retain market share.

But this is all neither here nor there.

There are now at least three "clean" implementations of the NET/ROM protocol
(MSYS, NOS, G8BPQ) ... but none I'm aware of for the TNC2. Has anyone done
a "clean" TNC2 NET/ROM protocol? I can't do one - I've seen the sources.

   ... Hank - w0rli

30. Network Management (was Re: Proposed "Call for Papers" for Networking Book

From: Tim Baggett <wbaggett@NMSU.edu>
Date: Tue, 31 May 1994 21:48:52 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.87.9405312152.B19001-0100000@gauss>
Rendered body type: text/plain

On Tue, 31 May 1994, TAPR Network Special Interest Group wrote:

> From: <stu@ash.lab.r1.fws.gov>
> Subject: Re: Proposed "Call for Papers" for Networking Book
> To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
> Date: Wed, 1 Jun 1994 00:13:08 +0000
>
[stuff zapped]

>
> How about adding a section on network diagnostics. One of the problems we
> seem to run into is simply defining the problem! We run into 'it's the other
> guy's fault' all the time and it's hard to make a quantitative analysis.
> I've tried by using axmon (by nk6k)... in fact, the paper that comes with
> the software is a good start...
>

I've been thinking about some kind of a Simple Network Management
Protocol (SNMP) that would benefit amateur packet radio. Right now I've been
quite interested in the Sun Net Manager that we have operating on the
network here at NMSU. I think something similar to SNM in that it can
detect failed nodes, gather information about a node's health, etc would
be very beneficial. I believe that a network management protocol should
occupy minimal data bandwidth so as not to have any impact on the
network. This could be hard to do on Amateur Radio considering our
current datarates.

Has anyone out there got any ideas, suggestions that could be used to
implement a SNMP into our packet networks? I was quite amazed at the
TexNet SNMP talk given at TAPR. I'm not committing to creating such a
protocol, but I'm interested in hearing what others think we would need
considering our current protocols and datarates.

73
Tim

****
Tim Baggett, AA5DF   Electrical Engineering Student
                                      New Mexico State University
Internet: WBAGGETT@NMSU.EDU
AMPR: AA5DF@NMSUGW.AMPR.ORG   US Snail: 1805 Rentfrow Apt #1
(When on) AA5DF.AMPR.ORG   Las Cruces, NM 88001
****

31. Re: NETROM Marketing

From: mwestfal@iris.csci.csusb.edu (Michael Westfall)
Date: Tue, 31 May 1994 21:30:59 -0700 (PDT)
To: netsig@tcet.unt.edu
Message-ID: <9406010430.AA26769@iris.csci.csusb.edu>
Rendered body type: text/plain

-> From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
-> Date: Tue, 31 May 94 15:59:49 PDT
->
-> > From: bob@ke9yq.ampr.org (Bob Van Valzah, ke9yq)
-> > Date: Tue, 31 May 1994 13:14:55 -0500
-> >
-> > >From: mwestfal@iris.csci.csusb.edu (Michael Westfall)
-> > >Date: Sun, 29 May 1994 12:06:07 -0700 (PDT)
-> > >
-> > >The Net/Rom people should have known about the above. Although they
-> > >had (still have?) the right to copyright and keep their stuff secret,

-> > >they shouldn't have done so. They violated the Hacker Ethic.
-> >
-> > I think we can agree that they didn't know their market, but my perspective
-> > is different from yours (perhaps because I make my living selling
B

[...]

-> Just as a point of "interesting historical information" ...
-> when the NET/ROM vs. TheNet fiasco started, I volunteered to look at
-> both source codes and render an opinion ... and also look at both object
-> codes and render another opinion. Did so. Does not matter what that
-> opinion was, since S-2000 did not persue the matter further.

-> There are now at least three "clean" implementations of the NET/ROM protocol
-> (MSYS, NOS, G8BPQ) ... but none I'm aware of for the TNC2. Has anyone done
-> a "clean" TNC2 NET/ROM protocol? I can't do one - I've seen the sources.

I think you just gave away what your opinion was, Hank. ;-)

----
73 de Mike,   ax.25net: N6KUY@W6JBT.#SOCA.CA.USA.NA
                  amprnet: n6kuy@n6kuy.ampr.org [44.18.0.49]
                internet :   mwestfal@silicon.csci.csusb.edu
           "Old MacDonald had a farm, dit didit dit didit dahdahdah."
GCS/M { -d+ p+ c++ l u++ e+(*) m++(-) s/+ !n-(---) h-- !f g+ w+ t++ r-(--) y+ }
----

32. Primer on network availability

From: mcdermot@eagle.aud.alcatel.com (Tom Mcdermott)
Date: Thu, 26 May 94 10:29:53 CDT
To: netsig@tcet.unt.edu
Message-ID: <9405261924.AA105794@eagle.aud.alcatel.com>
Rendered body type: text/plain

A primer on reliability as applied to amateur radio packet networks.
                            T.C. McDermott, N5EG
                                May 26, 1994
                        Texas Packet Radio Society, Inc.

1.0 Scope

Many messages have been sent regarding linking of large number of packet radio
switches, nodes, digipeaters, etc. And some have commented on the desirability
of very long packet networks. This monograph will describe how to calculate the
availability of such a system, given knowledge of the performance of the
equipment.

2.0 Definitiions

Let's define some terms, first. There are 3 basic parameters that need to be
known in order to make suitable calculations about network availability.

        MTBF = Mean Time Between Failures.   This is the average (mean) time
                between failures of a particular piece of equipment.
                For example: an MTBF of 1680 hours would equate to a piece of
                equipment failing once every 10 weeks, on average.

        MTTR = Mean Time To Restore.   This is the average (mean) time to
                restore a failed piece of equipment to service. For example:
                a piece of equipment with an MTTR of 8 hours implies that it
                takes 8 hours to: 1) notice that there is a problem,
                2) diagnose the problem, 3) drive to the site,
                4) repair the equipment, and 5) place it back in service.
                Of course the actual series of event, and the time to restore
                all depend on whether the equipment is accessible at any time,
                backup equipment that may be available, etc.

        A   = Availability. This is the portion of time that a piece of
equipment (on average) is available for use. This can be calculated as follows:

                A = MTBF / (MTBF + MTTR)   (1)

3.0 Some basic probability

Let's use some of the basic rules of probability to derive the availability of

networks of equipment that each has availability, A. There are two basic configurations of multiple pieces of equipment: 1) series, and 2) parallel. By this is meant the following: two pieces of equipment are in series if both are required to be operating correctly in order to get the job done. For example: suppose that you wanted to transmit a packet message across a 100-mile path, and there were two switches in the middle that were linked, and that the failure of either would prevent your packets from traversing the path. Then those switches, from a reliability point of view, are in series. The failure of either one of them would make the path not usable. In contrast, two pieces of equipment are in parallel when either alone is capable of getting the job done. For example: suppose that you wished to send a packet between two point that were 50 miles apart, and you had a choice of either of two switches, each of which alone was capable of making the path. Then those switches, from a reliability point of view, are in parallel.

3.1 Availability of things in series

We can calculate the availability of n items, all with the same availability, A, that are in series. The combined availability is:

An(ser) = A ^n (A raised to the 'n' power) (2)

For example, suppose that we have a packet network consisting of 20 nodes, that each individual node has an MTBF of 4368 hours (6 months), and an MTTR of 168 hours (1 week). Then the availability of a single node is 4368 / (4368 + 168) = 0.963 (96.3 percent of the time it works). The availability of a network of 20 of these nodes would be: 0.963^20 = 0.470 (47.0 percent of the time it works). We can see that, in general, putting items in series degrades the availability.

3.2 Availability of things in parallel

We can calculate the availability of n items, all with the same availability, A, that are in parallel. The combined availability is:

An(par) = 1 - ((1 - A) ^n) (3)

For example. suppose that we have a packet network consisting of 2 nodes, with MTBF = 4368 hours, and MTTR = 168 hours, and these two are in parallel. Then the individual availability is 0.963 (as in 3.1 above) and the combined availability is 1 - (1-0.963)^2 = 0.9986 (99.86 percent of the time it works). We can see that, in general, putting items in parallel improves the availability.

3.3 More complex models

We can calculate the availability of more complex networks many times by reducing them to series and parallel combinations that we now know how to handle. Sometimes, the combinations are not reducable to series-parallel combinations, but these cases are not common in amateur packet networks. The general procedure is to break up a network into subsections that can be described as being in series or parallel. Then each subsection can in turn be broken up into smaller subsections that are in parallel and or series, until the remaing network segments are entirely parallel or series.

The the availability of each subsection can be computed, and the subsection availabilities can be combined using (2) and (3) above to derive the network availability.

4.0 Some more examples

Lets look at a couple of example networks. Network one consists of 40 packet switches, all in series. It's a long haul network, and skinny. Each node has an MTBF of 4368 hours, and the MTTR is 332 hours (2 weeks, since the sysop left on vacation yesterday, and does so frequently! - nice work if you can get it). Then:

A = 4368 / (4368+332) = 0.929

An = 0.929^40 = 0.053

This network will funciton, end-to-end, 5 percent of the time, and will not work end-to-end 95 percent of the time. Hmmmm. Ok, let's assume that our sysop loses his cushy job, his extravagent vacation policy, etc., and can get to the site within 72 hours. Then the network availability would be:

A = 4368 / (4368+72) = 0.984

An = 0.984^40 = 0.520

Well, quite an improvement. The network actually works, end-to-end, 52% of the time. I guess we can all draw some conclusions about the level of service our poor sysops are going to have to provide if we want this stuff to really work. Alternatively, we could do some work up front, and build dual redundant nodes. Those are ones with hot-standby euqipment that takes over the failed equipment with no loss of service (even after lightning hits!). Let's double the investment in our network by providing dual-redundant nodes at each of the 40 sites. Incidentally, building dual-redundant equipment without common (joint) failures can be no small task in itself. The availability of this network, assuming our intrepid sysop finds out that he now takes 2 week business trips all the time, can be calculated by breaking our network into some subsections. Each dual-redundant node is a subsection, and we have 40 of those subsections in series. So, first we calculate the availability of the subsection:

A2(par) = (1 - (1 - 0.929)^2) = 0.995

and then the availability of all subsections would be:

A40(ser) = 0.995^40 = 0.817

Well, that's more like it. This network works 81.7 percent of the time, end-to-end, and the poor sysop can actually hold down a real job now. Ahhh, wait a minute. We have twice as much equipment in the network now, and thus it seems like twice as many things would break. Well, yes. Welcome to the dark side of the force - err, the dark side of high availability. In order to achieve this level of availability, we have to fix any failed equipment within 2 weeks - even if the failure does not take the node out of service. If we don't fix it, then the remaing part that still works now determines the node's availabilty, and we are no better off than before (at this node). So, there is no free lunch. Also, we have to be able to detect that something at the node has failed, even though it is still working. OK, so let's just put up two different packet networks each one of which reaches the two endpoints, but without any of this dual-redundant nonsense. In this case, we can model the two subsections as 40-element series connections of non-redundant nodes, and then we have two of these long strings in parallel.

A40(ser) = 0.053 (from above)

A2(par) = (1 - (1 - 0.053) ^2) = 0.103

Well, this strategy didn't work very well compared to making each node dual-redundant, did it? So it seems like our poor sysop is stuck in engineering dual-redundant nodes. Commercial telecom equipment is generally engineered this way. So, one alternate time-line (?) seems to indicate a possible future for packet radio based on dual-redundant nodes, and overworked sysops; another scenario indicates that we cannot have all these nodes in series, i.e.: we need long-hop technology.

73's, Tom, N5EG

June 1994

Original source file: netsig.9406
Source: http://ftp.tapr.org/tapr_history/SIG_Archives/netsig/mail_archive/netsig.9406

1. Re: Proposed "Call for Papers" for Networking Book

From: <stu@ash.lab.r1.fws.gov>
Date: Wed, 1 Jun 1994 00:13:08 +0000
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9406010009.A29783-0100000@ash.lab.r1.fws.gov>
Rendered body type: text/plain

On Tue, 31 May 1994, TAPR Network Special Interest Group wrote:

> From: "Ackermann, John" <jra@lawdept.daytonoh.NCR.COM>
> Subject: Proposed "Call for Papers" for Networking Book
> To: 'NETSIG Mailing List' <netsig@tcet.unt.edu>
> Date: Tue, 31 May 94 10:05:00 edt
>
>
[Outline deleted]

How about adding a section on network diagnostics. One of the problems we
seem to run into is simply defining the problem! We run into 'it's the other
guy's fault' all the time and it's hard to make a quantitative analysis.
I've tried by using axmon (by nk6k)... in fact, the paper that comes with
the software is a good start...

Stu Mitchell stu@lab.r1.fws.gov
USFWS Forensic Lab mitchellstu@fws.gov
Ashland, Oregon wd4eck@w7oek
*** These are my opinions, not the Government's ***

2. TAPR Handbook

From: ke5ci@astro.wnmu.edu
Date: Wed, 01 Jun 94 04:58:42 UTC
To: netsig@tcet.unt.edu
Message-ID: <3306@astro.wnmu.edu>
Rendered body type: text/plain

To: John Ackerman,
John,
I'm trying to estimate the scope of the Handbook project so that I can
contribute something suitable. Are we going to be able to use photographs
and drawings or will the document be text-only?
73 Fred

3. Re: Network Management (was Re: Proposed "Call for Papers" for Networking Book

From: David Bashaw <dbashaw@SynOptics.COM>
Date: Wed, 1 Jun 94 09:43:51 PDT
To: netsig@tcet.unt.edu
Message-ID: <9406011643.AA09932@rimbaud>
Rendered body type: text/plain

>Has anyone out there got any ideas, suggestions that could be used to
>implement a SNMP into our packet networks? I was quite amazed at the
>TexNet SNMP talk given at TAPR. I'm not committing to creating such a
>protocol, but I'm interested in hearing what others think we would need
>considering our current protocols and datarates.
>
>73
>Tim

An snmp stack would be a great analysis tool. It would be nice to see
some proposed object types and what could be managed. If someone is
feeling particularly ambitious how about some RMON stats also :>)

Dave

4. Re: NETROM Marketing

From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
Date: Wed, 1 Jun 94 10:07:21 PDT
To: netsig@tcet.unt.edu
Message-ID: <9406011707.AA04947@hanko.MENTORG.COM>
Rendered body type: text/plain

> From net_sig@tcet.unt.edu Wed Jun 1 00:19:36 1994
> From: net_sig@tcet.unt.edu (TAPR Network Special Interest Group)
> Subject: Re: NETROM Marketing
> To: hank_oredson@rainbow.mentorg.com
> Date: Wed, 1 Jun 94 2:18:59 CDT
> Reply-To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
> X-Mailer: ELM [version 2.4dev PL17]
> Content-Length: 2007
>
> From: mwestfal@iris.csci.csusb.edu (Michael Westfall)
> Subject: Re: NETROM Marketing
> To: netsig@tcet.unt.edu
> Date: Tue, 31 May 1994 21:30:59 -0700 (PDT)
>
> -> From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
> -> Date: Tue, 31 May 94 15:59:49 PDT
> ->
> -> > From: bob@ke9yq.ampr.org (Bob Van Valzah, ke9yq)
> -> > Date: Tue, 31 May 1994 13:14:55 -0500
> -> >
> -> > >From: mwestfal@iris.csci.csusb.edu (Michael Westfall)
> -> > >Date: Sun, 29 May 1994 12:06:07 -0700 (PDT)
> -> > >
> -> > >The Net/Rom people should have known about the above. Although they
> -> > >had (still have?) the right to copyright and keep their stuff secret,
> -> > >they shouldn't have done so. They violated the Hacker Ethic.
> -> >
> -> > I think we can agree that they didn't know their market, but my perspective
> -> > is different from yours (perhaps because I make my living selling
> B
>
> [...]
>
> -> Just as a point of "interesting historical information" ...
> -> when the NET/ROM vs. TheNet fiasco started, I volunteered to look at
> -> both source codes and render an opinion ... and also look at both object
> -> codes and render another opinion. Did so. Does not matter what that
> -> opinion was, since S-2000 did not persue the matter further.
>
>
> -> There are now at least three "clean" implementations of the NET/ROM protocol
> -> (MSYS, NOS, G8BPQ) ... but none I'm aware of for the TNC2. Has anyone done
> -> a "clean" TNC2 NET/ROM protocol? I can't do one - I've seen the sources.
>
>
> I think you just gave away what your opinion was, Hank. ;-)

You guessed wrong.

   ... Hank - w0rli

> ---
> 73 de Mike,   ax.25net: N6KUY@W6JBT.#SOCA.CA.USA.NA
>   amprnet: n6kuy@n6kuy.ampr.org [44.18.0.49]
>   internet :   mwestfal@silicon.csci.csusb.edu
>   "Old MacDonald had a farm, dit didit dit didit dahdahdah."
> GCS/M { -d+ p+ c++ l u++ e+(*) m++(-) s/+ !n-(---) h-- !f g+ w+ t++ r-(--) y+ }
> ---
>
>
>

5. Re: Re: NETROM Marketing (was Re: THENET vs NETROM)

From: w6swe@w6swe.tapr.org (Bob Nielsen)
Date: Wed, 01 Jun 94 14:54:24 MST
To: netsig@tcet.unt.edu
Message-ID: <86@w6swe.tapr.org>
Rendered body type: text/plain

>There are now at least three "clean" implementations of the NET/ROM protocol
>(MSYS, NOS, G8BPQ) ... but none I'm aware of for the TNC2. Has anyone done
>a "clean" TNC2 NET/ROM protocol? I can't do one - I've seen the sources.
>
>   ... Hank - w0rli
>

When I talked to John, G8BPQ in late 1989, he said that was
something he wanted to do (in fact he wanted to put some

enhancements into it so that he could do some things with his code
for the pc which would not be compatible with the existing NET/ROM
nodes). I know he had this on his "wish list" for some time, but
to my knowledge has not come out with any code. I assume he
decided not to persue it.

Bob

Bob Nielsen, W6SWE   Internet: w6swe@tapr.org
Tucson, AZ   Amateur IP: 44.124.12.16
                                ax.25: w6swe@wb7tls.az.usa.na

6. Re: NETROM Marketing

From: mwestfal@iris.csci.csusb.edu (Michael Westfall)
Date: Wed, 1 Jun 1994 15:38:04 -0700 (PDT)
To: netsig@tcet.unt.edu
Message-ID: <9406012238.AA29670@iris.csci.csusb.edu>
Rendered body type: text/plain

In the previous episode Hank qouted me qouting him:

-> > -> codes and render another opinion. Did so. Does not matter what that
-> > -> opinion was, since S-2000 did not persue the matter further.
-> >
-> >
-> > -> There are now at least three "clean" implementations of the NET/ROM

-> >
-> >
-> > I think you just gave away what your opinion was, Hank. ;-)

Then replied:

-> You guessed wrong.

oops. sorry. See what I get for assuming to know what you meant
by "clean".....and the fact that it didn't apply to TheNet....

----
73 de Mike,   ax.25net: N6KUY@W6JBT.#SOCA.CA.USA.NA
                  amprnet: n6kuy@n6kuy.ampr.org [44.18.0.49]
                 internet :   mwestfal@silicon.csci.csusb.edu
            "Old MacDonald had a farm, dit didit dit didit dahdahdah."
GCS/M { -d+ p+ c++ l u++ e+(*) m++(-) s/+ !n-(---) h-- !f g+ w+ t++ r-(--) y+ }
----

7. Lets GO!

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Wed, 1 Jun 1994 19:29:27 -0600 (MDT)
To: Sig Networking <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9406011949.A12338-0100000@kazak>
Rendered body type: text/plain

Now is the time to decide what ham radio will do with the packet
radio network. We have good intelligent people that have produced software
for the tnc-2, Data Engine, and Dos computers that will work with the
AX.25 and produce store-and-forward nodes which allow the network to grow
without loosing error rates or data speed.
     The first such system I used was a tnc-2 in the digipeat mode. We had
such a node that connected El Paso Tx with Las Cruces, NM and the date was
early 1987. This node worked fine while there were just a few packet
stations. Then we bought the Netrom chips and made single radio single
tnc-2 nodes that are still in operation today!
     Whatever we do, it must not junk the current network. The guys in
East Texas have done a good job with Texnet. We must design something that
will interface with it. Many nodes work well with software not of the
netrom type. A new system needs to be able to interface with most if not
all these software/hardware.
     After reading the mail from people like AA4RE leads me to believe
that nothing is going to stop the use of the Nord-Link software and a
network explosion with Netrom nodes will not end in litgation and hurt.
     Since law says we must use AX.25 of 1984, Netrom as developed by many
people should receive serious consideration as the node to use in any
future work. A few facts as I know them:
     1. The G8BPQ Switch has been tested at 56 kbaud by John Wise and it
worked just fine. So for the very fast nodes I would suggest using the

e-prom version in the Kantronics Data Engine. What is needed is the fast modem and a radio system that will handle this rate.

2. In the Huntsville, Al area hams have a 56kb link with Birmingham on the 220 MHz band. They are using the Grapes idea with JNOS version 1.08 operating in the netrom mode. Problems have been the frequent crashing of the jnos software. The hardware is a 286 dos computer with 6 com ports. At the Huntsville end they have the 56k port and a port to 4 tnc's that operate at 1200 and/or 2400 baud.

3. Johan Rinaldo has redone his code so JNOS1.10 can be placed on an e-prom and run in a Data Engine. I would assume the node would work like the dos version and can have netrom or not, and with cooperation could use IP packets carried by AX.25. The cooperation needed is for all the nodes to go with the IP idea. One strong point is that ANY of the nodes can be configured to interface with another Netrom node. Also it and the g8bpq switch in the data engine can support 2 radios so you can maintain the baud rate passing through the node.

4. The Kantronics Data Engine is expensive. I believe a tnc-x that has the g8bpq or jnos software as the base operating system could be built for far less than the 5 year old Data Engine design. Bill NJ7P has developed such a device and the time has come to test it on some mountain-tops. The main thing this new switch hardware must have is multi-port capability. It would be best if it was "on the board" capable of 4 ports with on-board modems, but the user can buy it with just 2 ports if that is all that's needed.

5. Based on what I have seen, computer cards with great capabilty and consumer cost of $15.00 use surface mount components and large scale integrated circuits. I think the proper thing to do is produce a smart plan that starts with finding the proper "brassboard" tnc. Then spend the money to make it cheap. This is the sticky part. I have no idea what the market size for a new node system will be but I have been asked by co-workers about digital radio systems and today there is a system of nodes at White Sands Missile Range, NM on a frequency near 170 MHz. Since it has plain tnc-2 clones it is using digipeating rather than Netrom, only because you cannot purchase Netrom anymore.

6. It is possible that if we can make this development available to industry and Government the number sold will be large. A ham buddy that works for an oil company is instrumenting 10,000 oil wells using radios in the 915 MHz region. He could sure make use of this tnc-x if it was available NOW!

In summary lets look hard again at netrom. It works very well and if we use it properly the problems we now have will go away. To wait for a replacement of ax.25 and new switch software will just leave time for more local networks to try something "new" and make a national network that much harder to do. 73, karl k5di@k5di.na.usa.na

8. Proposed "Call for Papers" for Networking Book

From: glg@balrog.k8lt.ampr.org (Gary L. Grebus)
Date: Thu, 2 Jun 94 00:33 EDT
To: netsig@tcet.unt.edu
Cc: glg@balrog.k8lt.ampr.org
Message-ID: <m0q94T9-00074YC@balrog.k8lt.ampr.org>
Rendered body type: text/plain

Hi John..

This looks really good. There are a couple of parts I think I would slice differently....

The TAPR Networking Guide
Proposed Outline

I. Introduction

II. Fundamentals of Networking
  a. Why Network?
  b. The Realities of RF
  c. Hidden Transmitter/Exposed Terminal Syndromes
  d. Network Definitions and Topologies

>I think it might be better to expand the topologies into a separate
>section on physical archictecture. Maybe something like:
>
> The Physical Layer
>   a. Network topologies (star, hierarchical, etc).
>   b. The Digipeater (and why it doesn't work)
>   c. LANs
>   c. Point-to-Point links

> d. Packet repeaters
> e. Sophisticated backbones (Cellnet, Hubmaster?, etc)

III. The Politics of Networking
a. Who Are We Doing This For?
b. Inter- and Intra- Group Cooperation
c. Finding Funds
d. Finding Sites
e. Designing for Growth

> Absolutely.

IV. Network Protocols -- A Summary
a. The Digipeater (and why it doesn't work)
b. NetROM and Related Protocols
c. ROSE
d. TexNet
e. TCP/IP
f. New Ideas (CellNet?)

>
> If you split out a section on the physical layer, then this section
> would probably focus on the link/netork layers including listing the
> various software implementations.
> IV. Network Protocols -- A Summary
> a. AX.25 - the lowest common denominator
> b. NetROM and Related Protocols
> c. ROSE
> d. TexNet
> e. TCP/IP
> f. New Ideas (maybe things like MACA, and Karn's new FEC work)

V. Network Protocols -- Configuration and Tuning
(note: these may be some lengthy papers!)
a. NetROM and Related Protocols
b. ROSE
c. TexNet
d. TCP/IP

> This might be the place to add something on network performance
> management and monitoring (does anybody really do it?).

VI. Modems and Radios
(note: some of these may be long, too)
a. 1200 baud -- DCD performance, deviation levels
b. 4800 baud -- Using the HAPN modem
c. 9600 baud -- Description and hints about the various modems
d. Modifying Radios for 9600 baud (Mike Curtis' article, plus additions?)
e. 19.2kB -- Info and hints on the D4-10
f. 56kB -- Info on the GRAPES modem
g. Higher speeds (10GHz?)

> This section might be:
> VI. Modems, Radios, and Interfaces
> and include anything on TNC tweaks, Ottawa PI, HAPN card etc.

VII Packet Repeaters
a. Why?
b. Bit Regenerators

> This is probably worth the separate section, even if packet
> repeaters are covered under topology. Especially if there is
> good how-to info. I think you wrote some things about using D4-10?
> I've seen stuff on a Mitrek conversion for repeater use.

VIII. Network Success Stories
(note: these are in random order, and we want to include as many as possible -- limited only by the writeups we receive)
a. NEDA
b. GRAPES
c. Ottawa
d. SW Ohio
e. ???

> Some other groups to hit up for papers might be: TexNet, the Chicago
> Area folks, the folks building the TCP/IP network in Connecticut,
> and Seattle/Western Washington.

Appendixes
a. Glossary
b. Path Loss/LOS/Power Budget Calculations

>   c.   Bibliography

This is going to be a big book!

73,
        /gary

9. Some good advice

From: "Ackermann, John" <jra@lawdept.daytonoh.NCR.COM>
Date: Thu, 02 Jun 94 10:36:00 edt
To: 'NETSIG Mailing List' <netsig@tcet.unt.edu>
Message-ID: <2DEDEE92@lawgate.daytonoh.ncr.com>
Rendered body type: text/plain

Robert Wood, WB5CRG, made a couple of good points about keeping this mailing
list a bit more readable. They're worth repeating here:

>Don't requote messages and then add 20 or so words at the end...
>OR Just don't requote messages or use CS when so doing.....

>Always install your callsign on a message along with return
i>nternet address. (so we can respond directly)

>Use <CR> as needed, not just a line feed.....

John   AG9V
jra@lawdept.daytonOH.ncr.com

10. Re: Perfect Network...

From: djk@dirku.demon.co.uk (Dirk-Jan Koopman)
Date: Thu, 2 Jun 1994 17:23:04 +0200 (BST)
To: netsig@tcet.unt.edu
Message-ID: <m0q9FXs-0004g8C@dirku>
Rendered body type: text/plain

> On Tue, 31 May 1994, TAPR Network Special Interest Group wrote:
>
> > From: djk@dirku.demon.co.uk (Dirk-Jan Koopman)
> > Subject: Re: Perfect Network...
> > To: netsig@tcet.unt.edu (TAPR NETSIG)
> > Date: Sun, 29 May 1994 23:47:42 +0200 (BST)
> >
> > >
> > > From: Robert Wood <w5robert@blkbox.COM>
> > > >
> > > I believe I said that for.... before also,
> > > I still agree, leave it off the reflector.
> > > But you seem to know about some libel case in the American courts,
> > > really, which , where, et. etc. etc.???
> >
> > The exact names etc I cannot recall (as I can't find last week's New
> > Scientist (a UK publication of the same ilk as Nature or Scientific
> > American albeit weekly and in a more tabloid style)). The gist of the
> > story is that an American Scientist is alleged to have defamed another
> > American Scientist in a rather extreme manner on the Internet - the
> > alleged defamed one has, apparently, issued writs for libel.
>
>   Well then, this case your concerned about can not have a thing to
> do with Netrom. The issue was whether NordLink in Germany had copied the
> stuff from Software 2,000 in the USA. So the current stuff must be over
> another issue.
>
> >
> > This has received some publicity on the Internet and elsewhere and is
> > currently (probably) going be used a stick to beat us with here in the
> > UK so that w
>   As an American I don't see how a disagreement between 2 US guys
> will have have a thing to do with your access to the internet.
>
> e have restricted access to all this free, uncensored
> > discussion 'cos we might see the real quality of our politicians (or is
> > it civil servants!). As an aside (and I know it isn't relevant to this
> > group) but the issue of 'pornography' and, more relevant, 'copyright'
> > material being freely exchanged is another stick which will be used,
> > here at least, RSN.
> >

> > Dirk
> >
>   Dirk, let me say in the kindest way that you may be making much
> more out of this than you should. You alarmed me last week by saying it
> was a Netrom dispute, and now it seems that is not the case. So lets drop
> the entire thing.
>

I am merely answering the WRONG question. My apologies for that, I
assumed that you wnated to know about a precedent that was looking
likely to be set about the 'ownership' of electronic mail in general. As
it stands at the moment (in the UK at least, and as I understand it in
the US as well) someone can't libel someone else by electronic means -
as it isn't possible to prove that the message actually came from whom
it says it does (there is also the arcaic prejudice about computer
related material being, inter alia, inadmissable in evidence; although
this is reducing).

Now this has NOTHING to do with NETROM - but has everything to do with
who is going to be legally responsible for the content of messages
transmitted by electronic means.

This chap isn't just going for the alleged author, he has his
blunderbuss out and is apparently spraying network providers, the odd
university computer dept etc as well.

Dirk

11. Re: Lets GO!

From: djk@dirku.demon.co.uk (Dirk-Jan Koopman)
Date: Thu, 2 Jun 1994 17:41:03 +0200 (BST)
To: netsig@tcet.unt.edu
Message-ID: <m0q9FpI-0004g8C@dirku>
Rendered body type: text/plain

If you are looking for a Data Engine replacement perhaps you might care
to look at the Thor Systems Ltd MSC800, which is essentially a 20Mhz XT
with 4 uncommitted serial ports in a box the size of a TINY-2 but half
as thick again.

This box currently runs G8BPQ networking software using the Baycom
modems, in eprom, and has been tested with 3 1200 baud and 1 9600. The
manufacturers say that it has the horsepower to run 4 9600 baud links
full duplex easily and probably 3 9600 and 1 64Kb (but haven't tested
that yet).

These are obtainable today @ 355 STG (+VAT if applicable) retail each.

SISKIN Electronics in Southampton (+44 707 847754) can supply.

Dirk g1tlh

12. Re: Proposed "Call for Papers" for Networking Book

From: Glenn Elmore <glenne@sr.hp.com>
Date: Thu, 2 Jun 94 9:49:26 PDT
To: netsig@tcet.unt.edu ("TAPR Networking Special Interest Group")
Message-ID: <9406021649.AA07993@hpsadl3.sr.hp.com>
Rendered body type: text/plain

> My target is to have the book in the hands of TAPR for publication by the
> end of the year.

John,
  Sounds ambitious to me! I'm a bit tired of publishing (to no apparant
avail) but I support the idea.

  This is just a response after a glance, don't take it to have much more
value than that would indicate.

Glenn n6gn

> --
> The TAPR Networking Guide
> Proposed Outline
>
> I.   Introduction
>
> II. Fundamentals of Networking
>   a.   Why Network?

Wide area shared resources
Information age relevance to the techno-lay person
continuance of the hobby
   emergency service provider
   social benefits, national and global
   technical/educational "playground"

>   b.   The Realities of RF
>   c.   Hidden Transmitter/Exposed Terminal Syndromes
>   d.   Network Definitions and Topologies

(II) seems a bit of a catchall already. There are user issues (a) down
through physical layer (b),(c) with potentially L2,3,4 thrown in (d).
Perhaps this section would best be deal with very high level (a)
and leave the rest to later sections.
  Also, it needs to be clearly stated at this point whether we are
considering the "R" in TAPR as a given since it has serious consequences
everywhere else. If we all end up being users of
fiber-to-the-door-national-hackers-network instead of radio amateurs we
need to leave room for that too.
  In any case it needs to be stated.

> III. The Politics of Networking
>   a.   Who Are We Doing This For?
>   b.   Inter- and Intra- Group Cooperation
>   c.   Finding Funds
>   d.   Finding Sites
>   e.   Designing for Growth

I think this needs to tie in to I and II. Since it is tightly coupled to the
economics, resources and motivations of the contributors.
I personally see the "political" issues as a much bigger challenge than
the technical ones.

> IV. Network Protocols -- A Summary
>   a.   The Digipeater (and why it doesn't work)
>   b.   NetROM and Related Protocols
>   c.   ROSE
>   d.   TexNet
>   e.   TCP/IP
>   f.   New Ideas (CellNet?)
>
> V.   Network Protocols -- Configuration and Tuning
> (note: these may be some lengthy papers!)
>   a.   NetROM and Related Protocols
>   b.   ROSE
>   c.   TexNet
>   d.   TCP/IP

Since protocols are present to support the broader issues of information
exchange and resource sharing, perhaps these could be shifted down a bit.
  I suppose what I'm suggesting is tending to separate the book into two
parts; theory and practice.

  The following would then probably be "Current Practice and Trends".

> VI. Modems and Radios
> (note: some of these may be long, too)
>   a.   1200 baud -- DCD performance, deviation levels
>   b.   4800 baud -- Using the HAPN modem
>   c.   9600 baud -- Description and hints about the various modems
>   d.   Modifying Radios for 9600 baud (Mike Curtis' article, plus
> additions?)
>   e.   19.2kB -- Info and hints on the D4-10
>   f.   56kB -- Info on the GRAPES modem
>   g.   Higher speeds (10GHz?)

perhaps I could contribute a word or two here.
I think something is needed, preceeding the details of various particular
radios, that talks in some detail about the problems of radio, specifically
the distortion producing nature of the medium, how that relates to
information rate and perhaps a little bit about reasonable methods to
effectively and economically solve some of the problems. This would be
 a place for a discussion of multipath and what sorts of BER one should try
 for at the physical layer. FEC might fit here as well.

>
> VII Packet Repeaters

```
>      a.   Why?
>      b.   Bit Regenerators
        Store&forward vs. end-end (this should already have been broached
        in (II) or (III).
>
> VIII.     Network Success Stories
> (note:  these are in random order, and we want to include as many as
> possible -- limited only by the writeups we receive)
>      a.   NEDA
>      b.   GRAPES
>      c.   Ottawa
>      d.   SW Ohio
>      e.   ???

Perhaps I can contribute our experiences at 230 kbps here.

>
> Appendixes
>      a.   Glossary
>      b.   Path Loss/LOS/Power Budget Calculations
           terrain elevation databases profiles
           system margins
           multipath
           BER (FEC)
           etc
>      c.   ???
>
>
```

13. Re: NETROM Marketing

```
From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
Date: Thu, 2 Jun 94 10:36:48 PDT
To: hank_oredson@rainbow.mentorg.com, netsig@tcet.unt.edu
Message-ID: <9406021736.AA06643@hanko.MENTORG.COM>
Rendered body type: text/plain
```

```
> From net_sig@tcet.unt.edu Wed Jun  1 17:53:58 1994
> From: net_sig@tcet.unt.edu (TAPR Network Special Interest Group)
> Subject: Re: NETROM Marketing
> To: hank_oredson@rainbow.mentorg.com
> Date: Wed, 1 Jun 94 19:53:20 CDT
> Reply-To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
> X-Mailer: ELM [version 2.4dev PL17]
> Content-Length: 1189
>
> From: mwestfal@iris.csci.csusb.edu (Michael Westfall)
> Subject: Re: NETROM Marketing
> To: netsig@tcet.unt.edu
> Date: Wed, 1 Jun 1994 15:38:04 -0700 (PDT)
>
>
>
>
> In the previous episode Hank qouted me qouting him:
>
> -> > -> codes and render another opinion.  Did so.  Does not matter what that
> -> > -> opinion was, since S-2000 did not persue the matter further.
> -> >
> -> >
> -> > -> There are now at least three "clean" implementations of the NET/ROM
>
> -> >
> -> >
> -> > I think you just gave away what your opinion was, Hank. ;-)
>
> Then replied:
>
> -> You guessed wrong.
>
> oops. sorry. See what I get for assuming to know what you meant
> by "clean".....and the fact that it didn't apply to TheNet....

I didn't say that.

Note the "at least" and note also that I have compared S-2000 source
code with TheNet source code.  I was not convinced that TheNet was
a separate implementation from the S-2000 implementation, thus I'm not
convinced it is a "clean" implementation.  However, my opinion was NOT
that TheNet was DERIVED or COPIED from NET/ROM, only that the two codes
```

had enough in common that it was very improbable they were NOT from a common source. Gave no opinion about WHICH common source, nor about who might have owned it. Enough on this topic, the point is moot since S-2000 no longer exists.

... Hank - w0rli

14. Protocols and the FCC

From: Douglas Fajardo <dfajardo@netcom.com>
Date: Thu, 2 Jun 1994 15:39:44 -0700 (PDT)
To: TAPR NETSIG <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9406021405.A23319-0100000@netcom3>
Rendered body type: text/plain

Every time this SIG starts to talk about improving or changing to a better protocol, someone invariably brings up the subject of the current limitations in the FCC rules, as a justification of the statement 'we can't afford to change because...'. This is not a direct quote of from any particular post, but a summary of what is, IMHO, an attitude problem with some members of the group. :(

The current rules regarding AX25 came about because we (the amateur radio community) used it, not because the FCC really cares WHICH protocol we use. Quite the contrary - one of the reasons for the Amateur radio service is to EXPERIMENT :).

This sig is SUPPOSED to be talking about the FUTURE direction of things networking, which includes the possibility of new protocols. Once we have decided on a future direction, THEN we can consider the details of what changes to the FCC rules might be needed :)

Lets not allow how things are now cloud our planning for the future!

15. Re: Protocols and the FCC

From: bruce@pixar.com (Bruce Perens)
Date: Thu, 2 Jun 94 17:13 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <m0q9Mta-0006gQC@mongo.pixar.com>
Rendered body type: text/plain

>From: Douglas Fajardo <dfajardo@netcom.com>

> The current rules regarding AX25 came about because we (the amateur
> radio community) used it, not because the FCC really cares WHICH protocol
> we use.

Well, almost. When FCC was asked to permanently authorize packet radio, the amateurs who made the request did not ask them to require AX.25 . FCC came up with that requirement on their own. So you can say the requirement is there because that's what some amateurs were using at the time. My guess is that because FCC insists on being able to monitor our communications for violations, one or more of their engineers felt that use of one protocol only would make it easier for them to monitor and wrote AX.25 into the rules.

As a TCP/IP user, AX.25 is a nusiance to me. I can send TCP/IP packets over the air without AX.25 and they work just fine, but I can't send third party traffic that way because of the regulation. The main reason this is annoying is that I can't use any of the commercial TCP/IP stacks without building an entire AX.25 implementation into the radio device driver. A secondary reason is the added overhead of AX.25 - OK, it's just a few bytes but that makes a difference at 1200 baud. Sometimes using AX.25 becomes extremely absurd: some locals are experimenting with spread spectrum, and they run AX.25 on top of the data-link protocol and under TCP/IP, just because the regulation mandates it for third-party traffic.

So, I agree we should look to the future and think positively. Thus, let's discuss an action item. I understand that someone from FCC informally announced at Dayton that they were considering dropping the AX.25 requirement. Perhaps we should help that process along by filing for a rule change. I would have the rules changed to no longer require any specific radio protocol. In the case of TCP/IP (which is already a U.S. Government-supported standard), I would suggest that the IP address should suffice as station identification, as long as the station is using an IP address that is registered with the address coordinator. A similar arrangement could be made for other protocols that use a centrally-administered addressing scheme as IP does. In the case of experimental modes, AX.25 or ASCII station identification every 10 minutes should suffice.

Bruce Perens AB6YM

16. Re: NETROM Marketing

From: mwestfal@sgi25.csci.csusb.edu (Michael Westfall)
Date: Thu, 2 Jun 1994 16:36:51 -0700 (PDT)
To: netsig@tcet.unt.edu
Message-ID: <9406022336.AA14222@sgi25.csci.csusb.edu>
Rendered body type: text/plain

In a former treatise, TAPR Network Special Interest Group spake thusly:
->
-> From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
-> > From: mwestfal@iris.csci.csusb.edu (Michael Westfall)
-> > In the previous episode Hank qouted me qouting him:
-> > Then replied:
-> > -> You guessed wrong.
-> > oops. sorry. See what I get for assuming to know what you meant
-> I didn't say that.

-> Enough on this topic, the point is moot since
-> S-2000 no longer exists.

Agreed. I apologize to the SIG for participating in the Rodney King-ization
of a dead horse...

```
-------------------------------------------------------------------------------
73 de Mike,      ax.25net:    N6KUY@W6JBT.#SOCA.CA.USA.NA
                  amprnet:    n6kuy@n6kuy.ampr.org [44.18.0.49]
                 internet :   mwestfal@silicon.csci.csusb.edu
            "Old MacDonald had a farm, dit didit dit didit dahdahdah."
GCS/M { -d+ p+ c++ l u++ e+(*) m++(-) s/+ !n-(---) h-- !f g+ w+ t++ r-(--) y+ }
-------------------------------------------------------------------------------
```

17. Re: Protocols and the FCC

From: Greg Jones <gjones@tenet.edu>
Date: Thu, 2 Jun 1994 20:38:53 -0500 (CDT)
To: netsig@tcet.unt.edu
Message-ID: <199406030138.UAA01812@Kay-Abernathy.tenet.edu>
Rendered body type: text/plain

>
> From: Douglas Fajardo <dfajardo@netcom.com>
> Subject: Protocols and the FCC
> To: TAPR NETSIG <netsig@tcet.unt.edu>
> Date: Thu, 2 Jun 1994 15:39:44 -0700 (PDT)
>
>   The current rules regarding AX25 came about because we (the amateur
> radio community) used it, not because the FCC really cares WHICH protocol
> we use. Quite the contrary - one of the reasons for the Amateur radio
> service is to EXPERIMENT :).

Well. I'll post this again for those who missed it last week.
The only place that refers to AX.25 has to do with Station Control and
nothing else. Please correct if I am wrong.

Part 97.109e Station Control
"No station may be automatically controlled while transmitting third-part
communications, except a station retransmitting digital packet radio
communications on the 6m and shorter wavelength bands. Such stations must
be using the ....AX.25.. Version 2.0, Oct 84 (or compatible) which .... The
retransmitted messages must originate at a station that is being locally or
remoetely controlled."

This has to do with Station Control of 3rd party traffic only.
The new rule changes defs of who is held responsible when for what.
But there are several changes in the defs. Most defining aux station,
forwarding station, and the like.   These effect networking.

Now at the FCC Form at Dayton, when the Automatic Message Forwarding stuff
was discussed, the following was stated "Another accommodation was made by
broadening that exception to the prohibition on your VHF and UHF stations
transmitting third party traffic while under automatic control. It will
include other message forwarding protocols, not just the ARRL AX.25".
(Quote from W5YI Report)

>   This sig is SUPPOSED to be talking about the FUTURE direction of
> things networking, which includes the possibility of new protocols. Once
> we have decided on a future direction, THEN we can consider the details of

> what changes to the FCC rules might be needed :)

The above suggests that we will not have to have the rules changed or
submit STAs, but there is a lot to be seen concerning any changes made to
the final document. I haven't seen it.

There are two major issues. We have something already, so how can we 1) help
those having problems making what they have work work better or correctly
and how do help these people identify their problems to start with
and 2) how do we provide path for technology transfer from those
experimenting with things that work, but are very hard to transfer.

There is a soltuion to the first one.

I am not sure if there will ever be a widespread solution to the second.
The one solution, has been happening since the first of packet
radio, that of folks publishing and letting others know what they are
working on. The only problem here, as Glenn pointed out, you get a little
tired of publishing with little response. Better things to spend your time
working and playing. The other difficulty is that the diversity of packet
radio, that makes it fun and exciting, also makes it almost impossible to
do anything but show people what they can do and let them make up their
mind. Many, while wanting to do more complicated efforts, find such
endeavors well beyond their scope of success, thus bringing us back to point
one.

Cheers - Greg

18. Re: Protocols and the FCC

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Thu, 2 Jun 1994 20:23:24 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9406022022.B24549-0100000@kazak>
Rendered body type: text/plain

On Thu, 2 Jun 1994, TAPR Network Special Interest Group wrote:

> From: Douglas Fajardo <dfajardo@netcom.com>
> Subject: Protocols and the FCC
> To: TAPR NETSIG <netsig@tcet.unt.edu>
> Date: Thu, 2 Jun 1994 15:39:44 -0700 (PDT)
>
>
>   Every time this SIG starts to talk about improving or changing to a
> better protocol, someone invariably brings up the subject of the current
> limitations in the FCC rules, as a justification of the statement 'we
> can't afford to change because...'. This is not a direct quote of from
> any particular post, but a summary of what is, IMHO, an attitude problem
> with some members of the group. :(
>
>   The current rules regarding AX25 came about because we (the amateur
> radio community) used it, not because the FCC really cares WHICH protocol
> we use. Quite the contrary - one of the reasons for the Amateur radio
> service is to EXPERIMENT :).

        Not while we try and come up with a network that is viable in the
near term. I know that given time we could get the fcc to change the law
to some new protocol, but how long will it take to develop this new
protocal?>
>   This sig is SUPPOSED to be talking about the FUTURE direction of
> things networking, which includes the possibility of new protocols. Once
> we have decided on a future direction, THEN we can consider the details of
> what changes to the FCC rules might be needed :)
>
>   Lets not allow how things are now cloud our planning for the future!
        Lets not say "don't use AX.25 because it is old. When you can
come up with a protocal that is significantly better than AX.25 AND CAN
PROVE IT, then I'll be ready to support something new.
        But today lets use AX.25 because its good!

karl k5di
>
>
>

19. Re: Protocols and the FCC

From: Tim Baggett <wbaggett@NMSU.edu>
Date: Thu, 2 Jun 1994 22:23:25 -0600 (MDT)

To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.87.9406022225.A10761-0100000@gauss>
Rendered body type: text/plain

On Thu, 2 Jun 1994, TAPR Network Special Interest Group wrote:

> From: bruce@pixar.com (Bruce Perens)
> Subject: Re: Protocols and the FCC
> To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
> Date: Thu, 2 Jun 94 17:13 PDT
>
> So, I agree we should look to the future and think positively. Thus, let's
> discuss an action item. I understand that someone from FCC informally
> announced at Dayton that they were considering dropping the AX.25
> requirement. Perhaps we should help that process along by filing for a
> rule change. I would have the rules changed to no longer require any
> specific radio protocol. In the case of TCP/IP (which is already a
> U.S. Government-supported standard), I would suggest that
> the IP address should suffice as station identification, as long as the
> station is using an IP address that is registered with the address
> coordinator. A similar arrangement could be made for other protocols
> that use a centrally-administered addressing scheme as IP does. In the
> case of experimental modes, AX.25 or ASCII station identification every
> 10 minutes should suffice.
>
>   Bruce Perens AB6YM

I like your suggestion Bruce. One thought crosses my mind however about logistics. The FCC will most likely want their own database of the IP addresses given out. What would be the best method for the IP coordinators to supply this information to the FCC in a timely manner? One possible solution I can think of is to use the DNS system on the Internet. The IP coordinaters can simply register the IP address on the Internet and include the callsign with the hostname. However, I believe there are many IP coordinators out there that do not have access to Internet, nor will they probably want to spend the time to do this. I do like the idea tho.

Realistically I think we will probably be stuck with using callsigns on our digital transmissions. Otherwise the FCC will not be able to identify which station did the transmitting. Unless you want to go back to CW ID that is.

I have been spending some time now thinking of a new protocol to use on the amateur packet frequencies. AX.25, NETROM, ROSE, and TCP/IP all have some very good positive aspects, but they all have some negative ones as well. I will not go into my thoughts on what I feel are the positive and negative aspects of each protocol here.

Instead this is what I think a new protocol should be like, IMHO. I am not a professional networking genius or anything, but this is what I think amateur radio needs:

1) Very low overhead
2) Very low overhead generally means a virtual circuit method of transport
3) A datagram mode will allow for routing packets to their destination
 via a different path. Maybe we can arrive at some protocol to marry
 virtual circuit and datagram together.
4) We need some kind of Network Management protocol that gives meaningful
 information in as few bytes as possible, due to our restricted bandwidth
5) Some sort of addressing scheme similar to IP numbers or whatever CCITT
 standard it is of phone numbers that ROSE uses. The addressing scheme
 should be short, yet contain enough information so the nodes can at least
 get the packet going in the right direction even if it does not know
 where the destination is. For example, if I want to send a packet to
 Colorado, the node, which may not even know Colorado exists, will send
 the packet to the next node to the North (I'm in Southern NM)
6) The protocol must be transparent to the user
7) User applications must easily interface to the protocols (the higher
 protocol layers on the OSI protocol model).

I seriously doubt if any of this discussion will go anywhere since designing a new protocol is very hard (and even if we did agree on such a protocol, implementing it would be even harder). Anyone want to comment on what I've suggested and start a discussion?

73
Tim

****

```
Tim Baggett, AA5DF                    Electrical Engineering Student
                                      New Mexico State University
Internet: WBAGGETT@NMSU.EDU
AMPR: AA5DF@NMSUGW.AMPR.ORG           US Snail: 1805 Rentfrow Apt #1
(When on) AA5DF.AMPR.ORG                        Las Cruces, NM 88001
**********************************************************************
```

20. Re: Lets GO!

From: djk@dirku.demon.co.uk (Dirk-Jan Koopman)
Date: Fri, 3 Jun 1994 07:57:49 +0200 (BST)
To: netsig@tcet.unt.edu
Message-ID: <m0q9TCQ-0004g8C@dirku>
Rendered body type: text/plain

```
>
> From: djk@dirku.demon.co.uk (Dirk-Jan Koopman)
> Subject: Re: Lets GO!
> To: netsig@tcet.unt.edu
> Date: Thu, 2 Jun 1994 17:41:03 +0200 (BST)
>
> If you are looking for a Data Engine replacement perhaps you might care
> to look at the Thor Systems Ltd MSC800, which is essentially a 20Mhz XT
> with 4 uncommitted serial ports in a box the size of a TINY-2 but half
> as thick again.

... stuff deleted

> SISKIN Electronics in Southampton (+44 703 207155) can supply.
                                          -_-------

Wrong telephone no ! (it was the faxno and the wrong area code! Just
completely wrong!)

Dirk
```

21. Re: Protocols and the FCC

From: dewayne@netcom.com (Dewayne Hendricks)
Date: Fri, 3 Jun 1994 06:10:18 -0900
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <199406031310.GAA12036@netcom.com>
Rendered body type: text/plain

```
At 18:33 6/2/94 -0500, TAPR Network Special Interest Group wrote:
>From: Douglas Fajardo <dfajardo@netcom.com>
>Subject: Protocols and the FCC
>To: TAPR NETSIG <netsig@tcet.unt.edu>
>Date: Thu, 2 Jun 1994 15:39:44 -0700 (PDT)
>
>
>     Every time this SIG starts to talk about improving or changing to a
>better protocol, someone invariably brings up the subject of the current
>limitations in the FCC rules, as a justification of the statement 'we
>can't afford to change because...'.  This is not a direct quote of from
>any particular post, but a summary of what is, IMHO, an attitude problem
>with some members of the group. :(
>
>     The current rules regarding AX25 came about because we (the amateur
>radio community) used it, not because the FCC really cares WHICH protocol
>we use. Quite the contrary - one of the reasons for the Amateur radio
>service is to EXPERIMENT :).
>
>     This sig is SUPPOSED to be talking about the FUTURE direction of
>things networking, which includes the possibility of new protocols. Once
>we have decided on a future direction, THEN we can consider the details of
>what changes to the FCC rules might be needed :)
>
>     Lets not allow how things are now cloud our planning for the future!

        Speaking as the chair of TAPR's FCC Regulatory Committee, I want to
add my support to your remarks above.  Please don't let concerns about what
the FCC will or won't do block your creative juices from flowing.  Part 97
will get sorted out in the end.

Thanks,
-- Dewayne


------------------------------------------------------------------------
Dewayne Hendricks, WA8DZP ! CIS: 75210,10    AppleLink: D6547
```

Tetherless Access Ltd.   ! Packet Radio: WA8DZP @ K3MC.#NOCAL.CA.USA.NOAM
43730 Vista Del Mar   ! AOL: HENDRICKS
Fremont, CA 94539-3204   ! Internet: dewayne@netcom.com
Phone: (510) 659-0809   ! Fax: (510) 770-9854
---

22. Re: Protocols and the FCC

From: bruce@pixar.com (Bruce Perens)
Date: Fri, 3 Jun 94 09:53 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <m0q9cUe-0006goC@mongo.pixar.com>
Rendered body type: text/plain

>From: Tim Baggett <wbaggett@NMSU.edu>

> Instead this is what I think a new protocol should be like, IMHO.

I opened this can of worms once and came to regret it. Don't try to
design a protocol on a mailing list like this - do it by yourself, or
with a few people at most, and present it to the world as a fait
acompli. I tried to do it an an open project using the IETF model.
Unfortunately, that doesn't work as well with Radio Amateurs as it
does with the Internet Engineering Task Force.

However, I think you are approaching the wrong end of the problem.
Super-low-overhead protocols are only necessary with super-low-speed
links. Look at all of the 9600-baud ads in QST - the masses are finally
discovering higher-speed equipment and it won't stop at 9600.

A more interesting avenue is the routing problem. You should be able to
drop a bunch of stations at random locations and turn them on, and they
should then automaticaly organize themselves into a fully-connected
network. Fred Goldstein's work on RSPF is a step in this direction, and
Bill Simpson seems to be taking it to the next step with the SIPP-discovery
protocol being discussed on the SIPP and Mobile-IP mailing lists.

        Bruce Perens AB6YM

---

23. Re: Protocols and the FCC

From: David Bashaw <dbashaw@SynOptics.COM>
Date: Fri, 3 Jun 94 10:06:46 PDT
To: netsig@tcet.unt.edu
Message-ID: <9406031706.AA10649@rimbaud>
Rendered body type: text/plain

Tim Baggett, AA5DF Wrote:
>Instead this is what I think a new protocol should be like, IMHO. I am
>not a professional networking genius or anything, but this is what I
>think amateur radio needs:
>
>1) Very low overhead
>2) Very low overhead generally means a virtual circuit method of transport
>3) A datagram mode will allow for routing packets to their destination
>via a different path. Maybe we can arrive at some protocol to marry
>virtual circuit and datagram together.

x.25 never be came popular in America because it generally sucks and is
better suited to poor quality europen comm lines. When frame relay
(x.25, The Next Generation) came out it really took off. Frame relay
is basically x.25 with a lot of the point-to-point overhead put where
it rightly belongs, on the application. Performance increased and the
users are much happier. If rf links can handle a protocol like
frame relay with appropriate modifications then link efficiency may
suffer some improvement:>).

One of the streamlining features of F.R. is the elimination of extensive
error checking at each and every hop. If NS=7 and NR=5 its the application
that cares and not the transport hardware.

>5) Some sort of addressing scheme similar to IP numbers or whatever CCITT
> standard it is of phone numbers that ROSE uses. The addressing scheme

Forget about the FCC dealing with any kind of ID other than the current
callsign system, and they cant even efficiently handle that.

I suppose my point is that it may not be necessary to abandon ax.25 in
favor of another if the current one can be rev'd to allow for logical
extensions which provide for the enhancments we all would like.

My $0.04 worth.

Dave Bashaw

24. Re: Protocols and the FCC

From: Greg Jones <gjones@tenet.edu>
Date: Fri, 3 Jun 1994 12:14:01 -0500 (CDT)
To: netsig@tcet.unt.edu
Message-ID: <199406031714.MAA05151@Kay-Abernathy.tenet.edu>
Rendered body type: text/plain

According to TAPR Network Special Interest Group:
> From: dewayne@netcom.com (Dewayne Hendricks)
> Subject: Re: Protocols and the FCC
> To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
> Date: Fri, 3 Jun 1994 06:10:18 -0900
>
> Speaking as the chair of TAPR's FCC Regulatory Committee, I want to
> add my support to your remarks above. Please don't let concerns about what
> the FCC will or won't do block your creative juices from flowing. Part 97
> will get sorted out in the end.
>

Yes. Good point Dewayne.

If anything the rules should be less regulated and more unregulated, since
we all have licenses.

Greg

25. Re: Protocols and the FCC

From: Greg Jones <gjones@tenet.edu>
Date: Fri, 3 Jun 1994 12:14:01 -0500 (CDT)
To: netsig@tcet.unt.edu
Message-ID: <199406031714.MAA05151@Kay-Abernathy.tenet.edu>
Rendered body type: text/plain

According to TAPR Network Special Interest Group:
> From: dewayne@netcom.com (Dewayne Hendricks)
> Subject: Re: Protocols and the FCC
> To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
> Date: Fri, 3 Jun 1994 06:10:18 -0900
>
> Speaking as the chair of TAPR's FCC Regulatory Committee, I want to
> add my support to your remarks above. Please don't let concerns about what
> the FCC will or won't do block your creative juices from flowing. Part 97
> will get sorted out in the end.
>

Yes. Good point Dewayne.

If anything the rules should be less regulated and more unregulated, since
we all have licenses.

Greg

26. nets

From: Robert Wood <w5robert@blkbox.COM>
Date: Fri, 3 Jun 1994 12:44:57 -0500 (CDT)
To: tapr netsig <netsig@tcet.unt.edu>
Message-ID: <9406031245.aa01307@blkbox.COM>
Rendered body type: text/plain

Wonder if one of the ground rules should be
to include little (or none) of the other messages you
address. We seem to raddle off two pages of a previous message
only to find that the new message has an added sentence or two
at the bottom.

Maybe each message should stand on it's own ????
73's Robert WB5CRG w5robert@blkbox.com

(and let's put our callsign and address for replys)

27. Re: Protocols and the FCC

From: mcdermot@eagle.aud.alcatel.com (Tom Mcdermott)
Date: Fri, 3 Jun 94 13:13:09 CDT
To: netsig@tcet.unt.edu

Message-ID: <9406031813.AA05681@eagle.aud.alcatel.com>
Rendered body type: text/plain

> From: bruce@pixar.com (Bruce Perens)
> Subject: Re: Protocols and the FCC
> To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
> Date: Fri, 3 Jun 94 09:53 PDT

[stuff deleted]

> A more interesting avenue is the routing problem. You should be able to
> drop a bunch of stations at random locations and turn them on, and they
> should then automaticaly organize themselves into a fully-connected
> network. Fred Goldstein's work on RSPF is a step in this direction, and
> Bill Simpson seems to be taking it to the next step with the SIPP-discovery
> protocol being discussed on the SIPP and Mobile-IP mailing lists.
>
> Bruce Perens AB6YM
>
>

In TexNet, we use an automatic event-driven routing table build that is fully distributed. Each node, when powered on, floods the network with 'IMHERE' packets, and all receivers reply with 'MYNAME' packets. This sounds simple, but it practice it gets unbelieveably complex in a hurry, especially when many nodes can talk with one another on the same channel. We solved some of these by building intelligent filtering into the MYNAME flooding algorithm, which prevents exponential growth of packets known to be useless routes. This works well, and requires no administrative burden - until we have a 450 band opening, then all h*ll breaks loose. Our centralized network management system keeps track of routes, and we can remotely change them, but automating this system has proven to be a tough task.

- Tom, N5EG

28. Re: nets

From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
Date: Fri, 3 Jun 94 13:34:30 PDT
To: netsig@tcet.unt.edu
Message-ID: <9406032034.AA09004@hanko.MENTORG.COM>
Rendered body type: text/plain

> From net_sig@tcet.unt.edu Fri Jun 3 13:24:59 1994
> From: net_sig@tcet.unt.edu (TAPR Network Special Interest Group)
> Subject: nets
> To: hank_oredson@rainbow.mentorg.com
> Date: Fri, 3 Jun 94 15:24:23 CDT
> Reply-To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
> X-Mailer: ELM [version 2.4dev PL17]
> Content-Length: 521
>
> From: Robert Wood <w5robert@blkbox.COM>
> Subject: nets
> To: tapr netsig <netsig@tcet.unt.edu>
> Date: Fri, 3 Jun 1994 12:44:57 -0500 (CDT)
>
> Wonder if one of the ground rules should be
> to include little (or none) of the other messages you
> address. We seem to raddle off two pages of a previous message
> only to find that the new message has an added sentence or two
> at the bottom.
>
> Maybe each message should stand on it's own ????
> 73's Robert WB5CRG w5robert@blkbox.com
>
> (and let's put our callsign and address for replys)

Do we have some sort of bandwidth problem ?

A few hundred k more or less would not seem to make any difference.

... Hank - w0rli

29. FW: TAPR Listserv Procedures

From: "Ackermann, John" <jra@lawdept.daytonoh.NCR.COM>
Date: Fri, 03 Jun 94 15:25:00 edt
To: 'NETSIG Mailing List' <netsig@tcet.unt.edu>
Message-ID: <2DEF83D8@lawgate.daytonoh.ncr.com>
Rendered body type: text/plain

The following from Greg on the TAPR-BB bears repeating here. It should help clear up how netsig works. BTW, I'm one of those people whose mailer doesn't (yet) properly handle the "Reply-To:" header, so I need to manually post my replies to messages on the list. I apologize in advance for any screwups this may cause.

John

>From: Greg Jones <gjones@tenet.edu>
Subject: TAPR Listserv Procedures
To: tapr-bb@tcet.unt.edu (TAPR-BB mailing)
Date: Fri, 3 Jun 1994 12:26:27 -0500 (CDT)

INFORMATION ON TAPR MAIL GROUPS
6/3/94

There have been several questions on how the TAPR lists are currently being run.

All three lists, NETSIG, BBSSIG, and TAPR-BB are moderated lists.

I read each list before allowing processing to happen. This is to reply to messages about join, unjoin, test, and so on by hand instead of having them posted to the group. Any message dealing with direct content is not being changed and is being posted as sent. The purpose of the moderation is to eliminate those incorrectly addressed messages. tapr-bb (this list) is a lot more tight than the others - since this is not an open discussion group, but one regarding posting of TAPR information for distribution. I reply to most messages sent to it that should normally be sent to TARP@TAPR.ORG.

Last weekend, we changed the listserv in order to eliminate our BOUNCED MAIL problem. The change that resulted has mail being sent from different accounts than those of the postings. Messages sent to netsig or now sent from
net_sig. A reply-to line is included in all messages, which most mailer programs handle correctly. If you do post to the wrong address, the mail eventually get sent to me by the listserv program and I send a message back to the sender regarding the problem.

I check the listserv 2 or more times a day and then start the process up. The listserv script (handling join, unjoin, help, etc) runs throughout the day by itself. Only the group lists run at different time, based on when I start them up.

If you have any questions, please send me e-mail at gjones@tenet.edu.

Greg

President -- Tucson Amateur Packet Radio Corp

TAPR Office (817) 383-0000 | Internet: gjones@tenet.edu
 ----

30. Re: Protocols and the FCC

From: David Bashaw <dbashaw@SynOptics.COM>
Date: Fri, 3 Jun 94 13:53:04 PDT
To: netsig@tcet.unt.edu
Message-ID: <9406032053.AA11249@rimbaud>
Rendered body type: text/plain

In our products (local area networks) we have a topology-building process that runs all the time which is driven by a packet we refer to as the HELLO packet. It get xmitted every 15s or so and we can build topo maps automatically. This could be an alternative to IMHERE broadcast storms.

Radio implementations could reduce this to once per hour or more. I realize this is ethernet-ish but it may hve radio value.

Dave Bashaw
dbashaw@synoptics.com

31. Re: Protocols and the FCC

From: Tim Baggett <wbaggett@NMSU.edu>
Date: Fri, 3 Jun 1994 15:05:19 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.87.9406031519.B19848-0100000@gauss>
Rendered body type: text/plain

On Fri, 3 Jun 1994, TAPR Network Special Interest Group wrote:

> From: mcdermot@eagle.aud.alcatel.com (Tom Mcdermott)
> Subject: Re: Protocols and the FCC
> To: netsig@tcet.unt.edu
> Date: Fri, 3 Jun 94 13:13:09 CDT
>   In TexNet, we use an automatic event-driven routing table build that
> is fully distributed. Each node, when powered on, floods the network with
> 'IMHERE' packets, and all receivers reply with 'MYNAME' packets. This sounds
> simple, but it practice it gets unbelieveably complex in a hurry, especially

>

I'm interested in learning more about this. Where can I get information
on the protocols used on TexNet? (I'm particularly interested in the
Network management protocols)

73
Tim

****
Tim Baggett, AA5DF   Electrical Engineering Student
                                      New Mexico State University
Internet: WBAGGETT@NMSU.EDU
AMPR: AA5DF@NMSUGW.AMPR.ORG   US Snail: 1805 Rentfrow Apt #1
(When on) AA5DF.AMPR.ORG   Las Cruces, NM 88001
****

32. Re: Automatic Route Discovery

From: ahgroff@dz12.cca.rockwell.com (A.H.Groff)
Date: Fri, 3 Jun 94 16:27:33 CDT
To: netsig@tcet.unt.edu
Message-ID: <9406032127.AA00834@dz12.cca.rockwell.com>
Rendered body type: text/plain

Bruce (AB6YM) and Tom (N5EG) have both commented on the routing problem.

 From my point of view for 'automatic' routing to work, the route discovery
process must only allow solid rf path neighbors as possible routes. Nothing
was worse in netrom than allowing vapor rf paths to put entrys in the nodes
table. What ever form that 'automatic routing' takes, I feel that the
node op should control which of all possible nodes on a frequency are
'reliable neighbor nodes'. This means add new neighbor when they become
fully operational and dropping neighbors that disappear for good.

  I can not envision any system which can discover reliable RF paths unless
it is a result of observation of a peiod of days (i.e. the length of a
mid west summer band opening)

AL, K0VM
ahgroff@dz12.cca.rockwell.com

33. Re: nets (fwd)

From: Robert Wood <w5robert@blkbox.COM>
Date: Fri, 3 Jun 1994 17:27:58 -0500 (CDT)
To: tapr netsig <netsig@tcet.unt.edu>
Message-ID: <9406031728.aa12395@blkbox.COM>
Rendered body type: text/plain

Forwarded message:
> From tcet.unt.edu!net_sig Fri Jun 3 16:29:59 1994
> From: TAPR Network Special Interest Group <net_sig@tcet.unt.edu>
> Message-Id: <9406032132.AA190537@tcet.unt.edu>
> Subject: Re: nets
> To: w5robert@blkbox.COM
> Date: Fri, 3 Jun 94 16:32:10 CDT
> Reply-To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
> X-Mailer: ELM [version 2.4dev PL17]
>
> From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
> Subject: Re: nets
> To: netsig@tcet.unt.edu
> Date: Fri, 3 Jun 94 13:34:30 PDT

>
>
> > From net_sig@tcet.unt.edu Fri Jun 3 13:24:59 1994
> > From: net_sig@tcet.unt.edu (TAPR Network Special Interest Group)
> > Subject: nets
> > To: hank_oredson@rainbow.mentorg.com
> > Date: Fri, 3 Jun 94 15:24:23 CDT
> > Reply-To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
> > X-Mailer: ELM [version 2.4dev PL17]
> > Content-Length: 521
> >
> > From: Robert Wood <w5robert@blkbox.COM>
> > Subject: nets
> > To: tapr netsig <netsig@tcet.unt.edu>
> > Date: Fri, 3 Jun 1994 12:44:57 -0500 (CDT)
> >
> > Wonder if one of the ground rules should be
> > to include little (or none) of the other messages you
> > address. We seem to raddle off two pages of a previous message
> > only to find that the new message has an added sentence or two
> > at the bottom.
> >
> > Maybe each message should stand on it's own ????
> > 73's Robert WB5CRG w5robert@blkbox.com
> >
> > (and let's put our callsign and address for replys)
>
> Do we have some sort of bandwidth problem ?
>
> A few hundred k more or less would not seem to make any difference.
>
>   ... Hank - w0rli
>
>
proably not, except some folks pay for the messages by the byte,
while others have a life and costs them their time to re-read a message
they've already read.

have fun   Robert WB5CRG   w5robert@blkbox.com

34. Re: Automatic Route Discovery

From: bruce@pixar.com (Bruce Perens)
Date: Fri, 3 Jun 94 22:29 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <m0q9oIP-0005jrC@mongo.pixar.com>
Rendered body type: text/plain

>From: ahgroff@dz12.cca.rockwell.com (A.H.Groff)
> From my point of view for 'automatic' routing to work, the route
> discovery process must only allow solid rf path neighbors as possible
> routes. ...
> I can not envision any system which can discover reliable RF paths unless
> it is a result of observation of a period of days...

Everyone who is interested in the routing problem should read K1IO's
excellent paper on RSPF. It's available via FTP in the file
ucsd.edu:/hamradio/packet/tcpip/docs/rspf22p.txt .

Could you be thinking of measuring routes over several days because you
are used to virtual-connection oriented protocols like AX.25 and NetROM
that can't change routes in the middle of a connection? There is a
better option if you have a datagram protocol such as IP: time out
routes very rapidly and dynamicaly adjust them during a connection.

That way, routes that happen because of a band opening are used during
the opening, and abandoned as soon as they become unreliable. Consider
how easy it is to do this: The key is to maintain multiple routes to
the same end node, each of which has a dynamicaly varying "preference"
number. It's simple enough to keep count of dropped packets, and reduce
the preference for a particular path each time that path drops a
packet. In the same way, the preference for a route is incremented a
slight amount each time it works reliably. Routes with equal preference
are used in round-robin fashion or chosen at random. This gives you a
dynamicaly optimized system that reacts quickly to the volatile
conditions of radio links. Because you're using a datagram protocol,
the user doesn't notice if the route changes in the middle of a
connection. So there's a real advantage of datagram protocols over VCs.
This is why TCP/IP was designed to correctly handle connections where
each successive packet travels a different route.

You can arrange for reliable routes to be preferred over intermittent
routes by incrementing the preference in a linear fashion but decrementing
it in an exponentially increasing fashion. That will also make the system
quickly abandon routes that go into complete failure for other routes that
previously had a lower preference. You can also measure the round-trip
time and use that to make the routes with more rapid round-trip times
achieve greater preference than equally reliable routes with slower
round-trip times.

Beaconing or another "introduction" protocol can be used to add "tentative"
routes that can then be tested and assigned a preference.

The end result is a software system that takes a number of unreliable
routes and makes them _look_ reliable, dynamicaly choosing the most
efficient path as conditions change from minute to minute.

I hope I'm not confusing anyone - this is a difficult subject and I find
it hard to explain it succinctly. Please chime in if you don't understand
one of my statements or don't agree.

        Bruce Perens AB6YM

35. Re: nets

From: barnaby@world.std.com (Richard L Barnaby)
Date: Sat, 4 Jun 1994 09:40:31 -0400
To: netsig@tcet.unt.edu
Message-ID: <199406041340.AA13779@world.std.com>
Rendered body type: text/plain

RE: Reducing bandwidth by including less of previous messages,
proposed by Robert WB5CRG

If convenient, we could summarize, as above, and not repeat, however
I find it often helpful in dealing with messages out of context, to
have the repeated text *expecially* with technical info as is discussed
at times here.

Often, I observe that when the text is left out, the original poster
claims to have been misunderstood or misquoted, and the technical
discussions bog down with *procedural* discussions (like this one).

My suggestion is to merely try to do the best we can, to repeat text
when and if necessary, and not to "Blindly" assume that the entire
message be "rehashed" when a succinct summary will suffice.
Barnaby AA1IB barnaby@world.std.com

36. The Future of Packet (was: JNOS 1.10 future...)

From: bm@hydra.carleton.CA (Barry McLarnon VE3JF)
Date: Sat, 4 Jun 94 10:17:10 WET DST
To: netsig@tcet.unt.edu (TAPR NETSIG Mailing List)
Message-ID: <9406041417.AA04845@hydra.carleton.CA>
Rendered body type: text/plain

Forwarded message:
> From bm Sat Jun 4 10:02:13 1994
> Errors-To: nos-bbs-request@hydra.carleton.ca
> Sender: nos-bbs-request@hydra.carleton.ca
> Precedence: bulk
> Reply-To: nos-bbs@hydra.carleton.ca
> From: bm (Barry McLarnon VE3JF)
> Message-Id: <9406041400.AA04807@hydra.carleton.CA>
> Subject: Re: JNOS 1.10 future...
> To: nos-bbs@hydra.carleton.ca
> Date: Sat, 4 Jun 94 10:00:03 WET DST
> In-Reply-To: <9406030214.AA01380@chaos.NIS.chaos>; from "Ron Atkinson N8FOW" at Jun 2, 94 10:14 pm
> X-Mailer: ELM [version 2.3 PL11]
>
> > >+---------------
> > >| WJ8Q are probably the only ones around here that run Linux on packet
> > >| and fiddle around with X windows apps on the air, and a super fast way
> > >+------------->8
> >
> > >*shudder*
> >
> > hahaha... slow.. yes.. but it's fun to do and run small programs back
> > and forth. I usually do this at night with him and I or with my Linux
> > system and a Sun SPARC. I even fired up Mosaic for X one night :-)
> > It's all for tests to determine what changes need to be made in the

> > future and determine what applications are practical to run over packet.
> > Running small X apps is fine, but I wouldn't do an XDM and run a window
> > manager over the air!   xclock works fine though.....
> >   Someday maybe it'll be practical to do, but right now it's not
> > unless you're just playing and/or testing. Are the Ottawa folks doing
> > any of this and have any experience?
>
> Sure... many apps that are impractical at lower speeds work well at 56kbps,
> even in a CSMA situation (assuming you have an fdx repeater or other
> mechanism to prevent hidden transmitters). I'm entering this message into
> vi using character-mode telnet over the 56kb link right now, and it's
> certainly fast enough to handle that. But there are limits, and I can
> attest to the fact that one user running Xmosaic can eat the 56kb LAN alive.
>
> This is a bit off-topic for nos-bbs, but I think I'll carry on and maybe punt
> this missive over to the TAPR NETSIG discussion where it's more apropos...
>
> There is a disturbing trend here: all the cool new netsurfer apps that
> feature live audio, full-motion video, etc are where the action is these
> days on the Internet. The stuff typically available on the packet network
> looks pretty mundane by comparison. The new apps need serious bandwidth,
> far outstripping our capabilities to provide it via radio links. Meanwhile,
> the telcos and cable companies are falling over each other trying to be the
> first to bring this kind of bandwidth into our homes. When this happens,
> many of the movers and shakers in the packet world will start to get drawn
> away. Most of us already know of people who were once active in packet
> networking, and then they got themselves a couple of Wavelan cards or the
> like, set themselves up with a private high-speed 900 MHz link into the
> Internet, and were never heard from again... Yep, the new services from
> the telco/cable providers will cost money, but building high-speed packet
> facilities costs money *and* time. So, where's the incentive to keep these
> folks involved in packet? When they go, who's going to build the network?
>
> It's ironic that the coming of the much-hyped info-highway may ultimately
> stifle development of the packet network. The latter will continue to
> exist, of course, but it may level off into a low-grade cowpath that's
> largely used in rural and remote areas, offering little more than what's
> already available today.
>
> Anyone care to refute this gloomy picture?
>
> Barry
>

--
  Barry McLarnon VE3JF/VA3TCP | Internet: bm@hydra.carleton.ca
  Ottawa Amateur Radio Club | AMPRnet: barry@va3tcp.ampr.org
  Packet Working Group | FreeNet: aa187@freenet.carleton.ca

37. pine

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Sat, 4 Jun 1994 09:34:32 -0600 (MDT)
To: TAPR BBS Sig <bbssig@tcet.unt.edu>
Cc: Sig Networking <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9406040928.D152-0100000@kazak>
Rendered body type: text/plain

I suspect a lot of us are using the pine internet mail system. I
also suspect a lot of us are not taking the time to look at the help
messages pine has. I decided to see if pine allowed deleting large blocks
of text from a message I am answering. To my surprise it DOES have a very
nice way to delete blocks of text but it is confusing.

        When I did a ctrl-g and looked at help it said you could mark
large sections of text by marking the text with ^^. WELL...I tried ^^ and
it worked not at all! So while fooling around and deleting lines of text,
pine came up with a message saying " you could use ctrl-^ to mark the
text". So I tried that and it works just fine.

        Move the curser to the start of the text you want to delete.
Press the Ctrl key and the Shift key AND the ^ key. Now move the curser
down the page. You will see the affected text in reverse video. You can
move up and down until just the text you want to delete is changed. Then
press the Ctrl-K and ZAP! it's gone. You can move text this way as well.

        I plan to use this a lot in the future. As one ham said, it costs
him money for each bit he recieves. So I will start causing fewer bytes
to be sent to him from me.

73, de karl k5di

38. pine

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Sat, 4 Jun 1994 09:34:32 -0600 (MDT)
To: TAPR BBS Sig <bbssig@tcet.unt.edu>
Cc: Sig Networking <netsig@tcet.unt.edu>
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I suspect a lot of us are using the pine internet mail system. I
also suspect a lot of us are not taking the time to look at the help
messages pine has. I decided to see if pine allowed deleting large blocks
of text from a message I am answering. To my surprise it DOES have a very
nice way to delete blocks of text but it is confusing.

When I did a ctrl-g and looked at help it said you could mark
large sections of text by marking the text with ^^. WELL...I tried ^^ and
it worked not at all! So while fooling around and deleting lines of text,
pine came up with a message saying " you could use ctrl-^ to mark the
text". So I tried that and it works just fine.

Move the curser to the start of the text you want to delete.
Press the Ctrl key and the Shift key AND the ^ key. Now move the curser
down the page. You will see the affected text in reverse video. You can
move up and down until just the text you want to delete is changed. Then
press the Ctrl-K and ZAP! it's gone. You can move text this way as well.

I plan to use this a lot in the future. As one ham said, it costs
him money for each bit he recieves. So I will start causing fewer bytes
to be sent to him from me.

73, de karl k5di

39. Re: Protocols and the FCC

From: dewayne@netcom.com (Dewayne Hendricks)
Date: Sat, 4 Jun 1994 23:40:17 -0900
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <199406050640.XAA19955@netcom.com>
Rendered body type: text/plain

At 21:12 6/2/94 -0500, TAPR Network Special Interest Group wrote:
>From: bruce@pixar.com (Bruce Perens)
>Subject: Re: Protocols and the FCC
>To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
>Date: Thu, 2 Jun 94 17:13 PDT
>
>>From: Douglas Fajardo <dfajardo@netcom.com>
>
>> The current rules regarding AX25 came about because we (the amateur
>> radio community) used it, not because the FCC really cares WHICH protocol
>> we use.
>
>Well, almost. When FCC was asked to permanently authorize packet radio,
>the amateurs who made the request did not ask them to require AX.25 .
>FCC came up with that requirement on their own. So you can say the
>requirement is there because that's what some amateurs were using at
>the time. My guess is that because FCC insists on being able to monitor
>our communications for violations, one or more of their engineers felt
>that use of one protocol only would make it easier for them to monitor
>and wrote AX.25 into the rules.
>
>As a TCP/IP user, AX.25 is a nusiance to me. I can send TCP/IP packets
>over the air without AX.25 and they work just fine, but I can't send
>third party traffic that way because of the regulation. The main reason
>this is annoying is that I can't use any of the commercial TCP/IP stacks
>without building an entire AX.25 implementation into the radio device
>driver. A secondary reason is the added overhead of AX.25 - OK, it's just
>a few bytes but that makes a difference at 1200 baud. Sometimes using
>AX.25 becomes extremely absurd: some locals are experimenting with spread
>spectrum, and they run AX.25 on top of the data-link protocol and under
>TCP/IP, just because the regulation mandates it for third-party traffic.
>
>So, I agree we should look to the future and think positively. Thus, let's
>discuss an action item. I understand that someone from FCC informally
>announced at Dayton that they were considering dropping the AX.25
>requirement. Perhaps we should help that process along by filing for a
>rule change. I would have the rules changed to no longer require any
>specific radio protocol. In the case of TCP/IP (which is already a

>U.S. Government-supported standard), I would suggest that
>the IP address should suffice as station identification, as long as the
>station is using an IP address that is registered with the address
>coordinator. A similar arrangement could be made for other protocols
>that use a centrally-administered addressing scheme as IP does. In the
>case of experimental modes, AX.25 or ASCII station identification every
>10 minutes should suffice.
>
        The TAPR FCC Regulatory Committee is currently examining the AX.25
issue. We plan to make a recommendation on how to proceed on this matter
to the TAPR Board of Directors as soon as we can. It is part of a detailed
effort by the committee to examine the entire Part 97 rules in the context
of the TAPR mission and objectives.
        In the meantime, I would encourage you to either file a request for
an STA (Special Temporary Authorization) or submit a petition for
rulemaking to the FCC as you seem to have a good handle on this issue. An
STA would if issued, would grant you temporary relief from using AX.25
until a rulemaking process could be completed.

Good luck,
-- Dewayne

Dewayne Hendricks, WA8DZP ! CIS: 75210,10   AppleLink: D6547
Tetherless Access Ltd.   ! Packet Radio: WA8DZP @ K3MC.#NOCAL.CA.USA.NOAM
43730 Vista Del Mar   ! AOL: HENDRICKS
Fremont, CA 94539-3204   ! Internet: dewayne@netcom.com
Phone: (510) 659-0809   ! Fax: (510) 770-9854
----

40. Re: Protocols and the FCC

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Sun, 5 Jun 1994 08:49:07 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9406050844.A16921-0100000@kazak>
Rendered body type: text/plain

On Sun, 5 Jun 1994, TAPR Network Special Interest Group wrote:
> >
> >Well, almost. When FCC was asked to permanently authorize packet radio,
> >the amateurs who made the request did not ask them to require AX.25 .
> >FCC came up with that requirement on their own. So you can say the
> >requirement is there because that's what some amateurs were using at
> >the time. My guess is that because FCC insists on being able to monitor
> >our communications for violations, one or more of their engineers felt
> >that use of one protocol only would make it easier for them to monitor
> >and wrote AX.25 into the rules.

        And this is important. It shows me that the FCC is not going to
allow a lot of different protocols to be used simply because they must be
able to monitor what goes on.

> >
> >As a TCP/IP user, AX.25 is a nusiance to me.

        As a TCP/IP user (44.30.2.5) I don't notice the added burden of
AX.25 at all. It does require you to think whether the proper route
should be w3er ax.25 gateway or w3er netrom gateway...not too big a
problem...hi

> > In the case of TCP/IP (which is
already a > >U.S. Government-supported standard), I would suggest that
> >the IP address should suffice as station identification, as long as the
> >station is using an IP address that is registered with the address
> >coordinator. A similar arrangement could be made for other protocols
> >that use a centrally-administered addressing scheme as IP does. In the
> >case of experimental modes, AX.25 or ASCII station identification every
> >10 minutes should suffice.
> >

        The whole idea of making the ham ip number a legal call for fcc
use is full of holes and problems. The FCC still holds the actual
issueing of calls to it's office in Gettysburg. We can hardly tell FCC
that Brian Kanter is the new ham call expert...hi

>   The TAPR FCC Regulatory Committee is currently examining the AX.25
> issue. We plan to make a recommendation on how to proceed on this matter
> to the TAPR Board of Directors as soon as we can. It is part of a detailed

> effort by the committee to examine the entire Part 97 rules in the context
> of the TAPR mission and objectives.

Is there a date when TAPR expects to have this new proposed Part 97 ready for submission to FCC?

My view is that we can plan to do things in the long term with ip or other protocal but should talk about using AX.25 until SOMEONE can tell us why the new stuff is better.

-karl k5di

41. Re: Protocols and the FCC

From: <stu@ash.lab.r1.fws.gov>
Date: Sun, 5 Jun 1994 17:10:29 +0000
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9406051741.B12662-0100000@ash.lab.r1.fws.gov>
Rendered body type: text/plain

Just out of curiousity, why did the FCC hardcode in AX.25? Lack of foresite?

Stu Mitchell stu@lab.r1.fws.gov
USFWS Forensic Lab mitchellstu@fws.gov
Ashland, Oregon wd4eck@w7oek
*** These are my opinions, not the Government's ***

42. Re: Protocols and the FCC

From: "Mark Herson, N2MH" <mherson@hudson.intac.com>
Date: Sun, 5 Jun 94 20:51:20 GMT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <2267.mherson@hudson.intac.com>
Rendered body type: text/plain

stu@ash.lab.r1.fws.gov writes:

> Just out of curiousity, why did the FCC hardcode in AX.25? Lack of foresite?

IMHO I think that at the time the rules were written, ax.25 was the only protocol that automatically identified the stations on the air. This is probably the reasoning behind the "or equivalent" clause in the rules. I don't think the FCC really cares that the protocol is ax.25 but rather that the mechanism is there for automatic identification. Include the automatic id and they're happy.

I'm not so sure about later link protocols (eg, Aplink, Clover, etc.). Remember that we're talking about Level 2 here, so higher level protocols are little interest to the FCC. They are mostly interested in identifying transmitters.

I don't know that anyone's beef is really with ax.25, but rather with its hardcoded defined paclen of 256 bytes. I think if that restriction were removed, we'd all have a better shot at making high speed more efficient with bigger frame sizes. (But that starts to bring up the issue of bit error rate on the channel, something for a different thread.) True, nos can support whatever paclen you want, but because the ax.25 spec says 256 bytes, that is the legal definition that the Commission goes by.

So, for you legal eagles out there, get the FCC to adopt an exception to the 256 byte limit in their rules.

Perhaps the only thing that should be improved at L2 in ax25 is just the thing that Phil Karn is working on now - forward error correction. And, with large and unspecified frame sizes.

Regards, Mark

43. Re: Protocols and the FCC

From: Paul Williamson <williams@qualcomm.com>
Date: Sun, 5 Jun 94 17:42:33 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <CMM.0.90.0.770863353.williams@maui.qualcomm.com>
Rendered body type: text/plain

> Just out of curiousity, why did the FCC hardcode in AX.25? Lack of foresite?

I wasn't involved at all, so take this with a pound of salt. I got
this impression from the newsletters and magazines at the time:

The amateur radio folks who discussed the original rulemaking with the
FCC made too much of the fact that each and every AX.25 packet
contains the callsign. I'm sure the FCC understood that this fact
was a byproduct of the current protocol spec, and that future
protocols might not have this property. Rather than write a bunch of
complex new rules about per-packet station identification, they just
decided to codify the current practice by citing AX.25.

The Australians got a worse rule, which actually required your real
callsign to be in the header field.

  -Paul Williamson

kb5mu@amsat.org

44. Re: Lets GO!

From: makinc@hhcs.gov.au (Carl Makin)
Date: Mon, 6 Jun 1994 12:00:17 +1000
To: netsig@tcet.unt.edu
Message-ID: <199406060200.AA07479@sserve.cc.adfa.oz.au>
Rendered body type: text/plain

At 4:13 PM 2/6/94 -0000, karl k5di@k5di.na.usa.na wrote:

>   In summary lets look hard again at netrom. It works very well and if
> we use it properly the problems we now have will go away. To wait for a

I'm not so sure the problem will go away with netrom, even if it is
operated properly. Netrom has problems scaling to large systems. Any
routing method where you can't agregate routes based on information in the
addresses will have problems with LARGE networks.

Carl.

--
Carl Makin (VK1KCM)   "Speaking for myself only!" '+61 6 289 8443'
makinc@hhcs.gov.au (Internet) / vk1kcm@vk1kcm.act.aus.oc (Packet Radio)
'The best book on programming for the layman is "Alice in Wonderland";
 but that's because it's the best book on anything for the layman.'

45. Re: Protocols and the FCC

From: makinc@hhcs.gov.au (Carl Makin)
Date: Mon, 6 Jun 1994 16:12:11 +1000
To: netsig@tcet.unt.edu
Message-ID: <199406060612.AA18510@sserve.cc.adfa.oz.au>
Rendered body type: text/plain

At 2:34 PM 6/6/94 -0000, Paul Williamson <williams@qualcomm.com> wrote:

> The Australians got a worse rule, which actually required your real
> callsign to be in the header field.

The rule states something like;

"Each packet must contain the callsign of the Originating Station, the
callsign of the Destination Station and, where different from the
Originating Station, the callsign of the Transmitting Station."

We're not actually tied to AX.25.

As Phil Karn pointed out a couple of years ago this makes everything except
basic digipeating (given the current usable protocols) illegal. It also
makes BBSs illegal.

A special exemption was granted to waive certain parts of the rules only
for backbone linking on ports that are not for user use. I basically only
lets ROSE in as legal as long as the 'link' port is not used for user
traffic. There is some ROSE in Australia but for the most part it's
scattered, isolated and unreliable.

There are new rules in the pipeline (now due 4Q94) which will free up
things considerably. Until then we are using netrom, tcp/ip and BBSs and
they are being 'tolerated'.

Fun eh?

Carl.
:-(

--
Carl Makin (VK1KCM)   "Speaking for myself only!" '+61 6 289 8443'
makinc@hhcs.gov.au (Internet) / vk1kcm@vk1kcm.act.aus.oc (Packet Radio)
'The best book on programming for the layman is "Alice in Wonderland";
 but that's because it's the best book on anything for the layman.'

46. Re: Protocols and the FCC

From: djk@dirku.demon.co.uk (Dirk-Jan Koopman)
Date: Mon, 6 Jun 1994 10:58:46 +0200 (BST)
To: netsig@tcet.unt.edu
Message-ID: <m0qAbSB-0004g9C@dirku>
Rendered body type: text/plain

> <mherson@hudson.intac.com> wrote:

.. stuff deleted

>
> Perhaps the only thing that should be improved at L2 in ax25 is just
> the thing that Phil Karn is working on now - forward error correction.
> And, with large and unspecified frame sizes.
>

I would be very interested in the case FOR forward error correction.
Having worked on systems that use it and those that don't, I am by no
means convinced that FEC's claimed advantages are acheived in practice.

I would interested in some facts.

Dirk g1tlh

47. nets

From: sbrown@charon.dseg.ti.com (Steve Brown)
Date: Mon, 6 Jun 94 07:52:43 -0500
To: netsig@tcet.unt.edu
Message-ID: <9406061252.AA14211@charon.dseg.ti.com>
Rendered body type: text/plain

Richard, AA1IB, writes:

> RE: Reducing bandwidth by including less of previous messages,
> proposed by Robert WB5CRG
>
> [Richard suggests that we summarize.]

I agree. Summaries also allow the original poster to determine if they
have been clear in their presentation - the other half of the
"misquoted, taken out of context" coin. I also suggest that we can
always delete the header information. Some of these messages are
half header.

73,

```
              ******************************************
              |  Steve Brown, WD5HCY         |            |
              |  sbrown@charon.dseg.ti.com   | Simplicate |
              |  wd5hcy@wd5hcy.ampr.org      | and add    |
              |       [44.28.0.61]           | lightness. |
              ******************************************
```

48. Re: Automatic Route Discovery

From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
Date: Mon, 6 Jun 94 09:36:16 PDT
To: netsig@tcet.unt.edu
Message-ID: <9406061636.AA12139@hanko.MENTORG.COM>
Rendered body type: text/plain

Just a minor nit: the NET/ROM protocol certainly does change routes
during a connection ... the fact that it does this is a major feature
of the protocol.

   ... Hank - w0rli

> From: bruce@pixar.com (Bruce Perens)
> Subject: Re: Automatic Route Discovery
> To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
> Date: Fri, 3 Jun 94 22:29 PDT
>

> Could you be thinking of measuring routes over several days because you
> are used to virtual-connection oriented protocols like AX.25 and NetROM
> that can't change routes in the middle of a connection?

49. Re: Lets GO!

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Mon, 6 Jun 1994 17:44:24 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9406061732.B7292-0100000@kazak>
Rendered body type: text/plain

>
> At 4:13 PM 2/6/94 -0000, karl k5di@k5di.na.usa.na wrote:
>
> >   In summary lets look hard again at netrom. It works very well and if
> > we use it properly the problems we now have will go away. To wait for a
>
> I'm not so sure the problem will go away with netrom, even if it is
> operated properly. Netrom has problems scaling to large systems. Any
> routing method where you can't agregate routes based on information in the
> addresses will have problems with LARGE networks.

        Carl I fail to see your point. I have a huge 9600 baud system
that runs without a single problem using the g8bpq version of netrom. In
what context have you seen netrom fail? Please be explicit since I need
to learn.

- karl

50. : 'Bandwidth Problem'

From: Michael Abernathy <mike@splinter.rad.usf.edu>
Date: Mon, 6 Jun 1994 20:01:11 -0400
To: netsig@tcet.unt.edu
Message-ID: <199406070001.UAA08739@splinter.rad.usf.edu>
Rendered body type: text/plain

I think you're missing the point, Hank. Ham radio, for most of us at least,
is a hobby, not a vocation. With our other responsibilities - job, family,
etc. - we have little time left to waste most of it re-reading parts of
messages we've already seen.

  If you need to respond to a particular point, fine. Include a sentence or
two. But there's no need to include the entire message again, as I have seen
here and on other sigs. It may not be tying up the Internet, but it is
definitely tying up my time having to wade through that mess.

  Let's be reasonable, and not sarcastic.

                                                Mike - KC4LJN

51. Re: Lets GO!

From: makinc@hhcs.gov.au (Carl Makin)
Date: Tue, 7 Jun 1994 18:55:18 +1000
To: netsig@tcet.unt.edu
Message-ID: <199406070855.AA11529@sserve.cc.adfa.oz.au>
Rendered body type: text/plain

At 4:03 PM 7/6/94 -0000, Klarsen <klarsen@acca.nmsu.edu> wrote:

>> operated properly. Netrom has problems scaling to large systems. Any
>> routing method where you can't agregate routes based on information in the
>> addresses will have problems with LARGE networks.

>   Carl I fail to see your point. I have a huge 9600 baud system
> that runs without a single problem using the g8bpq version of netrom. In
> what context have you seen netrom fail? Please be explicit since I need
> to learn.

Netrom is based on a system where the individual name of every node

reachable is kept in a table and is displayed upon command. With a *large* network this table either grows to be very large or you start limiting what nodes go into the table.

Lets say we built a 1000 node netrom network at 9k6 baud. If we have 1000 reachable nodes (which is the goal here) then we have a broadcast of 1000 nodes by each node every 30 minutes (or whatever interval). Each node entry in the broadcast takes (I think) around 15 bytes. We now have a 15Kb broadcast every 30 minutes (or whatever interval). Each user when they want to look at the list has to wade through 1000 nodes. An N command on a node will produce the 15Kb list, or around 250 lines. That's a bit much for me.

Now say we limit the number of nodes in the nodes list. The best way to do this is to only allow nodes in the list that are above a certain quality so that all the good reachable nodes nearby are in the list. At this point netrom fails as a routing protocol. Instead of the network automatically taking your data to it's destination you have to manually set up the circuit, navigating your way through the network until you reach your destination. This is fine if you are sitting at a keyboard and know where you want to go and where nodes are located. It's not real crash hot for automated systems.

It's my guess that there would be considerably more than 1000 nodes installed in the US alone at the moment let alone worldwide. As the number of nodes that you want to connect grows the problems with netrom get worse.

Netrom is fine for networks where the total number of nodes in the network can be displayed easily and quickly on a nodes list. As soon as you start cutting back on the nodes list or having the nodes list huge then it becomes difficult to navigate your way through it.

If you have a routing protocol that aggregates routes based on locale in some sane addressing standard then you can have full end-to-end connectivity without having to manually navigate your way around and still keep the routing tables small.

Carl.

--
Carl Makin (VK1KCM)   "Speaking for myself only!" '+61 6 289 8443'
makinc@hhcs.gov.au (Internet) / vk1kcm@vk1kcm.act.aus.oc (Packet Radio)
'The best book on programming for the layman is "Alice in Wonderland";
 but that's because it's the best book on anything for the layman.'

52. NET/ROM Documentation

From: gdo@aloft.att.com (Glenn D. O'Donnell)
Date: Tue, 7 Jun 94 09:02:10 EDT
To: netsig@tcet.unt.edu
Message-ID: <9406071302.AA01747@dasher>
Rendered body type: text/plain

Hi gang,
  I've been watching the reflector and enjoying every byte of it. I plan to help contribute once I learn more about NET/ROM. That's where I ask your help.
  I am an IP man, earning my green stamp off it as well as hobby use. I use NET/ROM (no flames about NET/ROM vs netrom vs TheNet please!) and like it but I haven't been able to find any description of the protocol itself. I know little about it.
  Before I jump into the fray and either praise or pan NET/ROM's future ability I want to make an educated comparison to other stuff. If anyone can point me to an FTP site, gopher, WWW, US Snail, etc. as a source for the NET/ROM protocol description, I would surely appreciate it.

        adTHANKSvance es 73,
        de Glenn O'Donnell, N3BDA
           AT&T Bell Laboratories, Allentown, PA
           gdo@aloft.att.com

53. Re: Protocols and the FCC

From: Bill Beech <bbeech@huachuca-emh8.army.mil>
Date: Tue, 7 Jun 94 6:38:05 MST
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <9406071334.AA183716@tcet.unt.edu>
Rendered body type: text/plain

> <mherson@hudson.intac.com> wrote:

.. stuff deleted

>
> Perhaps the only thing that should be improved at L2 in ax25 is just
> the thing that Phil Karn is working on now - forward error correction.
> And, with large and unspecified frame sizes.
>

the new standard for LAP-A (link access protocol - amateur) does remove
the packet length restriction. parameter negotiation is utilized for
stations to set a usable packet length. the standard is being sent to
the futures committee of the arrl this week....

bill, nj7p

54. Re: Protocols and the FCC

From: Glenn Elmore <glenne@sr.hp.com>
Date: Tue, 7 Jun 1994 07:41:37 -0800 (PDT)
To: netsig@tcet.unt.edu
Message-ID: <9406071441.AA22632@eagle.sr.hp.com>
Rendered body type: text/plain

Subject: Re: Protocols and the FCC

> I would be very interested in the case FOR forward error correction.
> Having worked on systems that use it and those that don't, I am by no
> means convinced that FEC's claimed advantages are acheived in practice.
>
> I would interested in some facts.
>
> Dirk g1tlh

  It is my opinion that, in an amateur context at least, the best
argument for FEC is that it allows better system economy. Without it,
L1 has to provide very low BER, perhaps in the sub 1e-6 region. While
this is possible, over radio it becomes very expensive (I would say,
"wasteful") to try to guarantee this. A more reasonable number is
probably 1e-2 or 1e-3. FEC can fill in the gap thus allowing economical
h/w to provide excellent service.

Glenn Elmore n6gn

amateur IP: glenn@SantaRosa.ampr.org
Internet: glenne@sr.hp.com

55. Re: : 'Bandwidth Problem'

From: "Jay Townsend" <jayt@comtch.iea.com>
Date: Tue, 7 Jun 1994 08:01:31 -0700 (PDT)
To: netsig@tcet.unt.edu
Message-ID: <m0qB2eh-0000mSC@comtch.iea.com>
Rendered body type: text/plain

>
> From: Michael Abernathy <mike@splinter.rad.usf.edu>
> Subject: : 'Bandwidth Problem'
> To: netsig@tcet.unt.edu
> Date: Mon, 6 Jun 1994 20:01:11 -0400
>
>   I think you're missing the point, Hank. Ham radio, for most of us at least,
> is a hobby, not a vocation. With our other responsibilities - job, family,
> etc. - we have little time left to waste most of it re-reading parts of
> messages we've already seen.

YEAH, AND YOU KNOW I AM ABOUT TIRED OF ALL THESE BANDWIDTH WASTING
COMPLAINTS!

>   Let's be reasonable, and not sarcastic.
>
>   Mike - KC4LJN
Good idea Mike, send 'em a e-mail.

--
Jay Townsend, Ws7i < jayt@comtch.iea.com >

56. Re: Lets GO!

From: root (The Super-user)
Date: Tue, 7 Jun 94 10:33:30 CDT
To: netsig
Message-ID: <9406071533.AA188182@tcet.unt.edu>
Rendered body type: text/plain

>From Carl Makin
Date: Tue, 7 Jun 1994 18:55:18 +1000
X-Sender: makinc@cnb09w.hhcs.gov.au
Mime-Version: 1.0
To: netsig@tcet.unt.edu
Subject: Re: Lets GO!

At 4:03 PM 7/6/94 -0000, Klarsen <klarsen@acca.nmsu.edu> wrote:

>> operated properly. Netrom has problems scaling to large systems. Any
>> routing method where you can't agregate routes based on information in the
>> addresses will have problems with LARGE networks.

>   Carl I fail to see your point. I have a huge 9600 baud system
> that runs without a single problem using the g8bpq version of netrom. In
> what context have you seen netrom fail? Please be explicit since I need
> to learn.

Netrom is based on a system where the individual name of every node
reachable is kept in a table and is displayed upon command. With a *large*
network this table either grows to be very large or you start limiting what
nodes go into the table.

Lets say we built a 1000 node netrom network at 9k6 baud. If we have 1000
reachable nodes (which is the goal here) then we have a broadcast of 1000
nodes by each node every 30 minutes (or whatever interval). Each node
entry in the broadcast takes (I think) around 15 bytes. We now have a 15Kb
broadcast every 30 minutes (or whatever interval). Each user when they
want to look at the list has to wade through 1000 nodes. An N command on a
node will produce the 15Kb list, or around 250 lines. That's a bit much
for me.

Now say we limit the number of nodes in the nodes list. The best way to do
this is to only allow nodes in the list that are above a certain quality so
that all the good reachable nodes nearby are in the list. At this point
netrom fails as a routing protocol. Instead of the network automatically
taking your data to it's destination you have to manually set up the
circuit, navigating your way through the network until you reach your
destination. This is fine if you are sitting at a keyboard and know where
you want to go and where nodes are located. It's not real crash hot for
automated systems.

57. NET/ROM Documentation

From: root (The Super-user)
Date: Tue, 7 Jun 94 10:34:50 CDT
To: netsig
Message-ID: <9406071534.AA188199@tcet.unt.edu>
Rendered body type: text/plain

To: netsig@tcet.unt.edu
Date: Tue, 7 Jun 94 09:02:10 EDT
Original-From: aloft!gdo (Glenn D. O'Donnell)
Original-To: tcet.unt.edu!netsig
Subject: NET/ROM Documentation

Hi gang,
  I've been watching the reflector and enjoying every byte of it. I plan to
help contribute once I learn more about NET/ROM. That's where I ask your help.
  I am an IP man, earning my green stamp off it as well as hobby use. I use
NET/ROM (no flames about NET/ROM vs netrom vs TheNet please!) and like it but
I haven't been able to find any description of the protocol itself. I know
little about it.
  Before I jump into the fray and either praise or pan NET/ROM's future ability
I want to make an educated comparison to other stuff. If anyone can point
me to an FTP site, gopher, WWW, US Snail, etc. as a source for the NET/ROM
protocol description, I would surely appreciate it.

        adTHANKSvance es 73,
        de Glenn O'Donnell, N3BDA

58. Re: Protocols and the FCC

From: root (The Super-user)
Date: Tue, 7 Jun 94 10:36:14 CDT

To: netsig
Message-ID: <9406071536.AA188213@tcet.unt.edu>
Rendered body type: text/plain

Date: Tue, 7 Jun 94 6:38:05 MST
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Subject: Re: Protocols and the FCC

> <mherson@hudson.intac.com> wrote:

.. stuff deleted

>
> Perhaps the only thing that should be improved at L2 in ax25 is just
> the thing that Phil Karn is working on now - forward error correction.
> And, with large and unspecified frame sizes.
>

the new standard for LAP-A (link access protocol - amateur) does remove
the packet length restriction. parameter negotiation is utilized for
stations to set a usable packet length. the standard is being sent to
the futures committee of the arrl this week....

bill, nj7p

59. Re: Protocols and the FCC

From: root (The Super-user)
Date: Tue, 7 Jun 94 10:37:17 CDT
To: netsig
Message-ID: <9406071537.AA188227@tcet.unt.edu>
Rendered body type: text/plain

Subject: Re: Protocols and the FCC
To: netsig@tcet.unt.edu
Date: Tue, 7 Jun 1994 07:41:37 -0800 (PDT)
Organization: Totally disorganized
Mime-Version: 1.0
Content-Transfer-Encoding: 7bit
Content-Length: 853

Subject: Re: Protocols and the FCC

> I would be very interested in the case FOR forward error correction.
> Having worked on systems that use it and those that don't, I am by no
> means convinced that FEC's claimed advantages are acheived in practice.
>
> I would interested in some facts.
>
> Dirk g1tlh

  It is my opinion that, in an amateur context at least, the best
argument for FEC is that it allows better system economy. Without it,
L1 has to provide very low BER, perhaps in the sub 1e-6 region. While
this is possible, over radio it becomes very expensive (I would say,
"wasteful") to try to guarantee this. A more reasonable number is
probably 1e-2 or 1e-3. FEC can fill in the gap thus allowing economical
h/w to provide excellent service.

Glenn Elmore n6gn

amateur IP: glenn@SantaRosa.ampr.org
Internet: glenne@sr.hp.com

60. Re: The Future of Packet (was: JNOS 1.10 future...)

From: Tim Baggett <wbaggett@NMSU.edu>
Date: Tue, 7 Jun 1994 10:09:33 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.87.9406071032.E5977-0100000@gauss>
Rendered body type: text/plain

On Sat, 4 Jun 1994, TAPR Network Special Interest Group wrote:

> > There is a disturbing trend here: all the cool new netsurfer apps that
> > feature live audio, full-motion video, etc are where the action is these
> > days on the Internet. The stuff typically available on the packet network
> > looks pretty mundane by comparison. The new apps need serious bandwidth,
> > far outstripping our capabilities to provide it via radio links. Meanwhile,

> > the telcos and cable companies are falling over each other trying to be the
> > first to bring this kind of bandwidth into our homes. When this happens,
> > many of the movers and shakers in the packet world will start to get drawn
> > away. Most of us already know of people who were once active in packet
> > networking, and then they got themselves a couple of Wavelan cards or the
> > like, set themselves up with a private high-speed 900 MHz link into the
> > Internet, and were never heard from again... Yep, the new services from

Wow, sounds exactly like me. I can't do that real time video/audio on
packet radio like I am here at work. Stuff in amateur radio is getting
too bogged down (IMHO) to be productive. In addition, amateurs just don't
have the money needed to build a 'real' network.

Thats primarily the reason why I haven't transmitted any packet RF from
my QTH in over a year - everything I'm interested in is piped in via T1
lines.

73
Tim

****
Tim Baggett, AA5DF   Electrical Engineering Student
                                      New Mexico State University
Internet: WBAGGETT@NMSU.EDU
AMPR: AA5DF@NMSUGW.AMPR.ORG   US Snail: 1805 Rentfrow Apt #1
(When on) AA5DF.AMPR.ORG   Las Cruces, NM 88001
****

61. Re: Protocols and the FCC

From: Tim Baggett <wbaggett@NMSU.edu>
Date: Tue, 7 Jun 1994 10:17:48 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.87.9406071048.F5977-0100000@gauss>
Rendered body type: text/plain

On Sun, 5 Jun 1994, TAPR Network Special Interest Group wrote:

> From: Klarsen <klarsen@acca.nmsu.edu>
> Subject: Re: Protocols and the FCC
> To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
> Date: Sun, 5 Jun 1994 08:49:07 -0600 (MDT)

> > >As a TCP/IP user, AX.25 is a nusiance to me.
>
>   As a TCP/IP user (44.30.2.5) I don't notice the added burden of
> AX.25 at all. It does require you to think whether the proper route
> should be w3er ax.25 gateway or w3er netrom gateway...not too big a
> problem...hi

But this here IS the problem with TCP/IP - we have to encapsulate it
inside of another protocol. You lose a LOT of the congestion control
of TCP/IP when you use it inside NetRom. This is because the Transport
Layer of NetRom is still active.

I performed an interesting experiment last Fall. I monitored a TCP/IP
connection that was implemented over NetRom. I ended up analyzing
approximatly 55 pages of trace session output. What I found was quite
interesting: There were times in with the TCP ACK for a data frame was
received correctly (indicating the data reached its destination) but the
NetRom ACK for the packet containing the TCP data frame was lost. This
caused a retry of the data at the NetRom level when at the TCP level all
was OK! This happened on several occasions so it was not just some 'fluke
of nature'.

Overall, encapsulation of one protocol inside of another is inefficent,
creates more overhead, and therefore should not be done (especially on
our slower speed links).

I also wonder about the use of AX25 in the virtual ciruit mode. Do we
really need end to end ACKing at the Ax.25 level when TCP does the same
thing?

>
>   My view is that we can plan to do things in the long term with ip
> or other protocal but should talk about using AX.25 until SOMEONE can
> tell us why the new stuff is better.

This is what we need to work on. We need actual simulations run so actual

numbers can be used to show that our current methods are inefficent.
Right now I'm riding the edge trying to decide if _I_ should perform some
simulation of CSMA regarding hidden nodes etc. If I were to do it, I just
dont know what would be gained from it. I would lose time, but would
probably end up learning something (which I could stay at work and get
paid to learn the same thing!)

73
Tim

****
Tim Baggett, AA5DF   Electrical Engineering Student
                                      New Mexico State University
Internet: WBAGGETT@NMSU.EDU
AMPR: AA5DF@NMSUGW.AMPR.ORG   US Snail: 1805 Rentfrow Apt #1
(When on) AA5DF.AMPR.ORG   Las Cruces, NM 88001
****

62. Re: Protocols and the FCC

From: Tim Baggett <wbaggett@NMSU.edu>
Date: Tue, 7 Jun 1994 10:39:57 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.87.9406071057.G5977-0100000@gauss>
Rendered body type: text/plain

On Mon, 6 Jun 1994, TAPR Network Special Interest Group wrote:

> > <mherson@hudson.intac.com> wrote:
>
> . stuff deleted
>
> >
> > Perhaps the only thing that should be improved at L2 in ax25 is just
> > the thing that Phil Karn is working on now - forward error correction.
> > And, with large and unspecified frame sizes.

I just completed my first digital communications class where we started
channel coding schemes, but I have to respond to this also:

FEC introduces 'extra' bits into the bit stream. These 'extra' bits act
as parity bits and add a certain amount of redundancy to the data so that
one or possibly two error bits can be corrected.

At what channel bit error rate would FEC be beneficial? Obivously you
dont use FEC on a channel with 10^-6 BER because the 'extra' bits will
reduce your actual thruput.

I can just imagine what it would be like if the hams had FEC in their
modems: They would be thrown up on all long links without even checking
the BER to see if FEC would be beneficial (how can the average amateur
determine the BER of such a backbone link easily?)

73
Tim

****
Tim Baggett, AA5DF   Electrical Engineering Student
                                      New Mexico State University
Internet: WBAGGETT@NMSU.EDU
AMPR: AA5DF@NMSUGW.AMPR.ORG   US Snail: 1805 Rentfrow Apt #1
(When on) AA5DF.AMPR.ORG   Las Cruces, NM 88001
****

63. Re: NET/ROM Documentation

From: gdo@aloft.att.com (Glenn D. O'Donnell)
Date: Tue, 7 Jun 94 13:03:26 EDT
To: netsig@tcet.unt.edu
Message-ID: <9406071703.AA02079@dasher>
Rendered body type: text/plain

> I want to make an educated comparison to other stuff. If anyone can point
> me to an FTP site, gopher, WWW, US Snail, etc. as a source for the NET/ROM
> protocol description, I would surely appreciate it.
>
>   adTHANKSvance es 73,
>   de Glenn O'Donnell, N3BDA
>

Oops and sorry everyone. I forgot to include my email address for replies.

(Internet Reflector Violation #624)

Glenn, N3BDA
gdo@aloft.att.com

64. Re: Protocols and the FCC

From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
Date: Tue, 7 Jun 94 14:22:57 PDT
To: netsig@tcet.unt.edu
Message-ID: <9406072122.AA14208@hanko.MENTORG.COM>
Rendered body type: text/plain

> From: Tim Baggett <wbaggett@NMSU.edu>
> Subject: Re: Protocols and the FCC
> To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
> Date: Tue, 7 Jun 1994 10:17:48 -0600 (MDT)
>
> On Sun, 5 Jun 1994, TAPR Network Special Interest Group wrote:
>
> > From: Klarsen <klarsen@acca.nmsu.edu>
> > Subject: Re: Protocols and the FCC
> > To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
> > Date: Sun, 5 Jun 1994 08:49:07 -0600 (MDT)
> >
> >
> > > > >As a TCP/IP user, AX.25 is a nusiance to me.

> Overall, encapsulation of one protocol inside of another is inefficent,
> creates more overhead, and therefore should not be done (especially on
> our slower speed links).

Yes.

For heavens sake, let us stop encapsulating AX.25 in HDLC.
HDLC is a perfectly good protocol on it's own, and by adding AX.25
on top of it we lose the use of some perfectly good octets.

I detect a certain amount of "tcp/ip is the answer" on this mailing
list, but am a bit uncertain what question was asked to elicit this answer.

   ... Hank - w0rli

65. Re: Protocols and the FCC

From: dkelly@nebula.tbe.com (david kelly)
Date: Tue, 7 Jun 94 16:57:20 -0500
To: netsig@tcet.unt.edu
Message-ID: <9406072157.AA11395@nebula.tbe.com>
Rendered body type: text/plain

> FEC introduces 'extra' bits into the bit stream. These 'extra' bits act
> as parity bits and add a certain amount of redundancy to the data so that
> one or possibly two error bits can be corrected.

First we need to know if the problem is single bit errors. I think not.
On the other hand, FEC is not limited to single bit errors, and this is
why all the research is being performed before somebody willy-nilly codes
it into [*]NOS, dumps it on the world, and it becomes a "standard". FEC
needs to be tuned to the problem at hand, hopefully adaptive.

The scrambler used in 4800 and faster modems eliminates the possibility of
single bit errors by XOR'ing the current bit with prior bits, thereby
spreading the single bit error into a multiple bit error. Shooting from
the hip, I think there could be 4 bits of 18 that could be trashed on a
single bit error. Then if one of the bits affected was part of a zero-
insertion or a frame flag you might make the whole frame unusable.

If we had money the way to solve the problem would be to build everything
from the modem to the CPU into a single integrated solution that would
handle the HDLC/SDLC stuff, NRZI, scrambler/randomizer, and FEC, all at
the same time. Maybe this problem has already been solved at a price we
can afford?

73, David Kelly, N4HHE
dkelly@nebula.tbe.com

66. Re: Protocols and the FCC

From: mcdermot@eagle.aud.alcatel.com (Tom Mcdermott)
Date: Tue, 7 Jun 94 16:59:23 CDT
To: netsig@tcet.unt.edu
Message-ID: <9406072159.AA07384@eagle.aud.alcatel.com>
Rendered body type: text/plain

Tim Baggett writes:

> > > <mherson@hudson.intac.com> wrote:
> >
> > . stuff deleted
> >
> > >
> > > Perhaps the only thing that should be improved at L2 in ax25 is just
> > > the thing that Phil Karn is working on now - forward error correction.
> > > And, with large and unspecified frame sizes.
>
> I just completed my first digital communications class where we started
> channel coding schemes, but I have to respond to this also:
>
> FEC introduces 'extra' bits into the bit stream. These 'extra' bits act
> as parity bits and add a certain amount of redundancy to the data so that
> one or possibly two error bits can be corrected.
>
> At what channel bit error rate would FEC be beneficial? Obivously you
> dont use FEC on a channel with 10^-6 BER because the 'extra' bits will
> reduce your actual thruput.
>
> I can just imagine what it would be like if the hams had FEC in their
> modems: They would be thrown up on all long links without even checking
> the BER to see if FEC would be beneficial (how can the average amateur
> determine the BER of such a backbone link easily?)
>
> 73
> Tim

Tim: the improvement in BER is greater than the loss of sensitivity due to increased bandwidth for useful FEC codes (such as Hamming, CBH, Golay, convolutional). For a code such as Hamming, with hard-decisions, the improvement in BER vs SNR is on the order of 2 dB at a BER of 10^-9. It can be much better than that if soft-decision convolutional codes are used (in the range 4-8 db). Compared to the uncoded BER vs SNR curves. Commercial microwave radios in fact rely on this improvement in system gain for their system gain and outage calculations.

The math for hard-decision linear block codes is very straightforward, and is freshman probability and stastics, mostly. I have written an EXCEL spreadsheet that computes these curves for gausian-noise limited channels, and one for impulse-noise limited channel with gaussian noise. A crude approximation, but it shows how well a simple interleaved-block FEC can actually work. I have compared (7,4) (15,11) (31,26) and (63,57) codes, and I conclude that (15,11) provides good performance for reasonable implementation complexity (of course, each person's definition of reasonable is subject to opinion).

I will show these during my talk on 9600 / 19200 FSK modem design at Hamcom in Dallas this Saturday (June 11th) if you are interested.

- Tom, N5EG

67. Re: Protocols at 1.2 k

From: ssampson@sabea-oc.af.mil (Steve Sampson)
Date: Tue, 7 Jun 1994 16:58:04 -0500 (CDT)
To: netsig@tcet.unt.edu
Message-ID: <9406072158.AA01616@sabea-oc.af.mil>
Rendered body type: text/plain

Tim Baggett, AA5DF says:
> Overall, encapsulation of one protocol inside of another is inefficent,
> creates more overhead, and therefore should not be done (especially on
> our slower speed links).

At slower speeds the encapsulation degredation is most noticeable and your argument holds. When you move to speeds such as 19.2 Full Duplex then the overhead becomes insignificant. Where AX.25 and Net/Rom fail is in their small packet size and austere operational modes. As the speed goes up, the packet size needs to increase also. For 9.6 k a 512 size is appropriate, and 56 k should probably be in the 1 to 2 k size. Running 56 k and 256 byte packets, of which 40 bytes are header will be on the far left side of an

efficiency bell curve. Moving to ethernet datagram encapsulation or X.25 VC mode will make little difference in overall efficiency of a network when large packets are used. By austere operational modes, I mean the common amateur network consisting of more than two nodes on a network frequency and an Omni antenna. No matter what the protocol, any network path with more than two nodes on a frequency will also not come off the efficiency curve baseline.

> I also wonder about the use of AX25 in the virtual ciruit mode. Do we
> really need end to end ACKing at the Ax.25 level when TCP does the same
> thing?

No, you don't, but it seems important at 1.2 k speeds. The ACK time is on the order of seconds to minutes, so the effect seems more important than it really is. If the ACK times were in milli-seconds no one would complain about VC. VC or DG at 19.2 k or 56 k using large 1 k packets would not be noticeable and the arguments one way or the other wouldn't draw the large crowds it does when amateurs debate it at 1.2 k speeds. DG would have the advantage equal to replacing your stock exaust manifold with a set of custom headers...

If you want to create a state of the art network at 1.2 k (which most Hams can budget) it will consist of IP datagrams (possibly in the fragmented mode to save headers) and no more than two nodes on a frequency going beam to beam and low power (enough to do the job plus margin). Each node will then require two radios and two antennas. The network will look more like a straight line than the random pattern of most amateur networks. A good band would be UHF and up. You should be able to transmit 3 or 4 FCC regulated size (256 byte) packets per TCP ACK.

This setup will outperform any level 2 VC protocol at 1.2 k. Encapsulating IP in AX.25 is as you say ineffecient and should be avoided where money exists. In any case, Cheap VC networks using Omnis are better than no network at all.

--
Steve

68. Re: Protocols and the FCC Re: Protocols and the FCC Re: Protocols and the FCC

From: djk@dirku.demon.co.uk (Dirk-Jan Koopman)
Date: Wed, 8 Jun 1994 00:14:23 +0200 (BST)
To: netsig@tcet.unt.edu
Message-ID: <m0qBALg-0004g9C@dirku>
Rendered body type: text/plain

>
> Subject: Re: Protocols and the FCC
>
>   It is my opinion that, in an amateur context at least, the best
> argument for FEC is that it allows better system economy. Without it,
> L1 has to provide very low BER, perhaps in the sub 1e-6 region. While
> this is possible, over radio it becomes very expensive (I would say,
> "wasteful") to try to guarantee this. A more reasonable number is
> probably 1e-2 or 1e-3. FEC can fill in the gap thus allowing economical
> h/w to provide excellent service.
>

so what you are saying is that _on_a_quiet_channel_ current ax25 tones (inefficient as they are) don't work for anything less than some small BER? What's more economical than a Tiny-2? or a home built BSX board?

Now I don't know about you, but I have links (long distance links, eg 72 miles on 145Mhz) with quite small S/N ratios (maybe 18db) which are giving retry rates < 4%. Now in really marginal, noisy condx I can see a case for putting FEC on _if_you_can't_improve_S/N_ but that advantage then disappears in a puff of smoke the moment you add another half duplex station 20 miles the other side of that thar hill.

It seems to me one of the instant things we could do (apart from the general addition of a built in 9600 baud connector to all radios) is go straight away to FFSK tones, that will allow 1200 baud in half the bandwidth of bell 202 tones or run 2400 baud direct in current bandwidths with a lot of radios being able to manage 4800 baud all thru the mike socket (pech...).

Some people some time ago did some work on fax modem chips, now I know that there are training time problems but some of these chips had half duplex short training sequences (v27 V29?), what happened to all of that?

Coming back to the point, I am still interested in any factual data showing the advantages of FEC in amateur radio practice (not purpose

built radio paging networks).

Dirk g1tlh

69. Re: Protocols and the FCC

From: bruce@pixar.com (Bruce Perens)
Date: Tue, 7 Jun 94 16:57 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <m0qBB1E-0007pDC@mongo.pixar.com>
Rendered body type: text/plain

Bruce Perens wrote:
> As a TCP/IP user, AX.25 is a nusiance to me.

>From: Tim Baggett <wbaggett@NMSU.edu>
> But this here IS the problem with TCP/IP - we have to encapsulate it
> _inside_ of another protocol.

Tim, I want to be very sure that you and others understand that it is
not necessary to encapsulate TCP/IP inside of another protocol.

"Naked IP" works just fine on the air. It's got checksums and everything.
Everything that the AX.25 UI frame provides is redundant when used with
TCP/IP, except perhaps the station identification. The only reason we
encapsulate AX.25 within IP is because we're legally required to do so
if we want to move third party traffic.

Again, it is _not_ technically necessary to encapsulate TCP/IP in
AX.25, NetROM, or another protocol. We could do just as well with
naked IP and a station ID every 10 minutes.

Thanks

Bruce Perens

70. Re: Protocols and the FCC

From: Tim Baggett <wbaggett@NMSU.edu>
Date: Tue, 7 Jun 1994 22:31:18 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.87.9406072218.A12164-0100000@gauss>
Rendered body type: text/plain

On Tue, 7 Jun 1994, TAPR Network Special Interest Group wrote:

> Bruce Perens wrote:
> > As a TCP/IP user, AX.25 is a nusiance to me.
>
> >From: Tim Baggett <wbaggett@NMSU.edu>
> > But this here IS the problem with TCP/IP - we have to encapsulate it
> > _inside_ of another protocol.
>
> Tim, I want to be very sure that you and others understand that it is
> not necessary to encapsulate TCP/IP inside of another protocol.
>

Yes Bruce, I agree it is not necessary. It was my point that one should
NOT encapsulate whenever possible. There are many other reasons why we
need to encapsulate IP inside other protocols, the largest being that the
number of TCP/IP nodes around here are are few and usually far enough away
(either by distance or on another frequency) so that an intermediate node
must be used to send the packet to the remote station.
AX25 truly is a nusiance to TCP/IP. Net/Rom is an even larger nusiance!

This is my reason for prefering THENET X1J since it allows IP to be
transmitted as IP and NetRom to be transmitted as NetRom without the
encapsulation. (BTW, TCP/IP without AX25 does work well and fast!).
Also, there was a comment earlier about there seems to be a large
consensus that TCP/IP is the answer to our problems. I'm not sure my
self. I stick to my suggestions that each protocol has some very good
advantages. We somehow need to combine these advantages into a protocol
we can move into the next century with.

73
Tim

****
Tim Baggett, AA5DF Electrical Engineering Student
                    New Mexico State University
Internet: WBAGGETT@NMSU.EDU

```
AMPR: AA5DF@NMSUGW.AMPR.ORG           US Snail: 1805 Rentfrow Apt #1
(When on) AA5DF.AMPR.ORG                        Las Cruces, NM 88001
**********************************************************************
```

71. Net/Rom encapsulation

```
From: roberts@ses6a.bt.co.uk
Date: Wed, 8 Jun 1994 09:29:36 +0100
To: netsig@tcet.unt.edu
Message-ID: <9406080829.AA132360@tcet.unt.edu>
Rendered body type: text/plain
```

```
>From:  NAME: Dave Roberts
       FUNC: DTI14
       TEL: 0473 224566                      <ROBERTS AT A1 AT SES6A>
To:    "netsig@tcet.unt.edu" @ R11F @ MRGATE

>>From: Tim Baggett <wbaggett@NMSU.edu>
>>Subject: Re: Protocols and the FCC

>>But this here IS the problem with TCP/IP - we have to encapsulate it
>>_inside_ of another protocol. You lose a LOT of the congestion control
>>of TCP/IP when you use it inside NetRom. This is because the Transport
>>Layer of NetRom is still active.

It shouldn't be !. Last year I implemented an IP router in TheNet, and
the way I implemented the code was to pass the encapsulated frame to the
L3 Net/Rom router not to the L4 routines. There is therefore no flow
control in operation at L4. As far as I can remember NOS does the same
thing. The transport layer is therefore NOT active.

>>I performed an interesting experiment last Fall. I monitored a TCP/IP
>>connection that was implemented over NetRom. I ended up analyzing
>>approximatly 55 pages of trace session output. What I found was quite
>>interesting: There were times in with the TCP ACK for a data frame was
>>received correctly (indicating the data reached its destination) but the
>>NetRom ACK for the packet containing the TCP data frame was lost. This
>>caused a retry of the data at the NetRom level when at the TCP level all
>>was OK! This happened on several occasions so it was not just some 'fluke
>>of nature'.

Weird. Maybe NOS is doing something funny, but if so this is a bug not
an intrinsic feature of Net/Rom encapsulation. Appended is an extract of
the receive code from TheNet X-1 Netrom handler. As you can see the
hook for IP encapsulation is before any netrom congestion control or
retry mechanisms. As far as I know, I implemented it in a manner
compatible with NOS so I would expect NOS to do the same !.

>>Overall, encapsulation of one protocol inside of another is inefficent,
>>creates more overhead, and therefore should not be done (especially on
>>our slower speed links).

Agreed. Do not lose sight of the fact however that IP is *DESIGNED* to
sit on top of subnetworks. It exists in raw format only in special
cases. Usually, it is encapsulated in AX.25, X.25, Ethernet, FR or
similar.

>>I also wonder about the use of AX25 in the virtual ciruit mode. Do we
>>really need end to end ACKing at the Ax.25 level when TCP does the same
>>thing?

TCP doe NOT do the same thing. AX.25 provides link layer flow control.
TCP and Netrom mechanisms provide end to end congestion control. What
you can get however is feature interaction if, for example, you use
linear backoff on TCP with AX.25 VCs over a single link.

I am a newcomer to this group so forgive me if I lack the history
of this discussion, but I feel a great many people ( in messages OTHER
than the one I am commenting on ) don't appreciate the way IP uses
subnetworks. Perhaps a discussion on this first would clear the air
so to speak on the protocol replacement and subnetwork issues.

Dave
G8KBB

-----------------------------------
VOID    l4rx()                  /* Frames empfangen                        */
  {
  char     usrcal[7];           /* Call des Users                          */
  char     orgnod[7];           /* Call des absendenden Knotens            */
```

```
  unsigned fenste;              /* Fenstergroesse                           */
  register unsigned cnt;        /* Scratch Zaehler                          */
  register mhtyp *nxtfra;       /* naechstes Frame                          */
  mhtyp    *antwor;             /* Antwort auf Frame                        */
  cirtyp   *cirent;             /* CIRTAB Eintrag des Users                 */

  while ((nxtfra = (mhtyp *) l4rxfl.lnext) != (mhtyp *) &l4rxfl.lnext) {
#ifdef STATSCMD
    L4RXCNT[0]++;               /* bump received L4 packet count */
#endif
    unlink(nxtfra);             /* Frame aus Kette loesen                   */
    if ((nxtfra->putcnt - nxtfra->getcnt) >= 5) { /* lang genug?            */
      l4hdr0 = getchr(nxtfra);  /* Header holen                             */
      l4hdr1 = getchr(nxtfra);
      l4hdr2 = getchr(nxtfra);
      l4hdr3 = getchr(nxtfra);
      if (((l4opco = getchr(nxtfra)) & 0x07) != 0x01) { /* CONREQ immer gut  */
        if ((l4hdr0 < NUMCIR)   /* Index im Bereich?                        */
          && ((cirpoi = &cirtab[l4hdr0])->state3 != 0)
          && (cirpoi->ideige == l4hdr1))
        {
            l4pidx = cirpoi->idxpar;
            l4pcid = cirpoi->idpart;
        }

#ifdef IPROUTE
        /* if the frame appears to be an IP frame encapsulated in
         * a netrom frame, then link it to the ip receive list
         */
        else if( l4opco == NR4_OP_PID &&
                 l4hdr0 == NR_PROTO_IP &&
                 l4hdr1 == NR_PROTO_IP )
        {
          nxtfra->pid = PID_IP;
          relink( nxtfra, iprxfl.lprev );
          continue;
        }
#endif
        else {                  /* schlechter Header                        */
          dealmb(nxtfra);       /* Frame vernichten                         */
          continue;
          }
        }
      switch (l4opco & 0x07) {  /* ueber Opcode verzweigen                  */
/*============================*/
case 1:                         /* Connect Request                          */

code continues from here with normal netrom opcode and circuit handling
including retry mechanisms.
```

72. Re: The Future of Packet (was: JNOS 1.10 future...)

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Wed, 8 Jun 1994 06:15:33 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9406080608.A25195-0100000@kazak>
Rendered body type: text/plain

```
>
> Wow, sounds exactly like me. I can't do that real time video/audio on
> packet radio like I am here at work. Stuff in amateur radio is getting
> too bogged down (IMHO) to be productive. In addition, amateurs just don't
> have the money needed to build a 'real' network.
>
> Thats primarily the reason why I haven't transmitted any packet RF from
> my QTH in over a year - everything I'm interested in is piped in via T1
> lines.
>
> 73
> Tim
```

Tim and I are very fortunate. We live in a town Las Cruces, NM that has a really enlightned university New Mexico State University. We both enjoy total free access to the internet in the most positive way. We can do ANYTHING!

Internet makes ham packet radio rather mondane. Tim is a student training himself for a job. I am about to retire. But to both of us it is stupid to spend money on ham packet radio. We already have a lot more bandwidth now and it ain't ham radio but it's about ham radio.

So the effect of these tapr sigs may be to assure we who
contribute to them will look back and say by by packet radio, I have
found something better.

karl k5di

73. Re: Automatic Route Discovery

From: mcdermot@eagle.aud.alcatel.com (Tom Mcdermott)
Date: Wed, 8 Jun 94 08:35:47 CDT
To: netsig@tcet.unt.edu
Message-ID: <9406081335.AA11616@eagle.aud.alcatel.com>
Rendered body type: text/plain

> From: ahgroff@dz12.cca.rockwell.com (A.H.Groff)
> Subject: Re: Automatic Route Discovery
> To: netsig@tcet.unt.edu
> Date: Fri, 3 Jun 94 16:27:33 CDT
>
> Bruce (AB6YM) and Tom (N5EG) have both commented on the routing problem.
>
> From my point of view for 'automatic' routing to work, the route discovery
> process must only allow solid rf path neighbors as possible routes. Nothing
> was worse in netrom than allowing vapor rf paths to put entrys in the nodes
> table. What ever form that 'automatic routing' takes, I feel that the
> node op should control which of all possible nodes on a frequency are
> 'reliable neighbor nodes'. This means add new neighbor when they become
> fully operational and dropping neighbors that disappear for good.
>
>   I can not envision any system which can discover reliable RF paths unless
> it is a result of observation of a peiod of days (i.e. the length of a
> mid west summer band opening)
>
> AL, K0VM
> ahgroff@dz12.cca.rockwell.com
>
>

Al: in Texnet we use a link-lockout table in each node. This table identifies
by Texnet node number, which nodes may not link to 'this' node. We set
these up so that nodes that are non-adjecent but may link during good
propogation, will, in fact, not establish a link. We have room for 5 nodes
in this table, and if either node contains a lockout of another, it will not
link. One of the problems, however, is that during band openings, we get
links established over 600-1000 mile distances on 445 Mhz at 9600 baud.
We have not coded these very-far-apart nodes into the lockout tables,
due to impractibility.

Our nodes are EPROM-based, and to try and put in all possible lockouts, and to
change them everytime one of the 80 Texnet nodes changes or a new one is
added would mean re-EPROMMING a lot of sites, and this is pretty tough to do.
So, our lockouts solve 98% of the problem, and we put up with the 2% of the
time that we get wierd band openings.   Incidentally, even if there is a band
opening, we won't form a different routing table unless one of the nodes in
the network is reset or given a node_announce command. So, this limits us
to only a few times a year when things get really hosed up. This is one
advantage of state-driven routing changes vs. timer-based routing changes.
There are, of course, disadvantages too.

- Tom, N5EG

74. Re: Protocols and the FCC

From: Glenn Elmore <glenne@sr.hp.com>
Date: Wed, 8 Jun 1994 08:29:07 -0800 (PDT)
To: netsig@tcet.unt.edu
Message-ID: <9406081529.AA09893@eagle.sr.hp.com>
Rendered body type: text/plain

>
> From: djk@dirku.demon.co.uk (Dirk-Jan Koopman)
>
> so what you are saying is that _on_a_quiet_channel_ current ax25 tones
> (inefficient as they are) don't work for anything less than some small
> BER? What's more economical than a Tiny-2? or a home built BSX board?

  I was actually being more general. In a radio environment the extra
cost involved in guaranteeing BERs low enough to get the vast majority
of packets through with no bit errors (which, without FEC, cause the
whole packet to be thrown out with the bathwater, so to speak) provides
poor return on investment.

As one goes to higher speeds, the characteristics of radio make this expensive. Multipath, in particular, makes it difficult to cheaply eliminate bit errors when the differential delay is on the order of a symbol period.

I believe that there are many solutions *much* more economical than a Tiny-2. However, they don't use vhf and they don't use omnidirectional antennas. While it was not intended to be "production" h/w, the 10 GHz link I showed in Ham Radio Magazine and other places, is about the same cost as a Tiny2 but has 3-4 orders of magnitude more information capacity.

My current project uses SS to help remove the multipath-caused bit errors and moderate frequency (1.2 GHz) to allow fairly focussed beams. See my 9th CNC paper for a justification of directional antennas in amateur networking. I hope to use FEC to fill the gap between economical h/w and a reliable bit stream. I don't yet have that part solved (economically). My current goal is a parts cost of $50 for the entire RF section.

> Now I don't know about you, but I have links (long distance links, eg 72
> miles on 145Mhz) with quite small S/N ratios (maybe 18db) which are
> giving retry rates < 4%. Now in really marginal, noisy condx I can see a
> case for putting FEC on _if_you_can't_improve_S/N_ but that advantage
> then disappears in a puff of smoke the moment you add another half
> duplex station 20 miles the other side of that thar hill.

And I would hazard a guess that your link actually operates a long way from the Shannon limit for that same transmitter power (and even cost) moved to microwave and running focussed beams.

> Coming back to the point, I am still interested in any factual data
> showing the advantages of FEC in amateur radio practice (not purpose
> built radio paging networks).

Comparing the demodulated bit stream of a pair of my 256 kbps 904 MHz radios over a truly line-of-sight 20 mile path (where multipath components are 20+ dB below the main path) with the situation where the two ends are only 2 miles apart but located in mild suburban/rural clutter; trees houses etc, typical of many amateur QTHs I observe that the second situation has bit errors in the 1e-2 to 1e-3 region and delivers around the same C/N as the first, probably a bit worse. I'd *like* us all to use links of the first type, they certainly offer the most information capacity/$ (or pound), however I don't see it as being realistic in an amateur context.

Getting amateurs to use only quality paths does not seem practical, even to a local server/hub (like the Hubmaster protocol was designed for). It is in this kind of real world environment that I think we need methods like SS and FEC to bridge the gap.

Glenn n6gn

75. Re: Protocols and the FCC

From: schellew@wu1.wl.aecl.ca (Wayne Schellekens)
Date: Wed, 08 Jun 1994 16:11:29 -0600 (CDT)
To: netsig@tcet.unt.edu
Message-ID: <9406082111.AA03214@wu1.wl.aecl.ca>
Rendered body type: text/plain

> The whole idea of making the ham ip number a legal call for fcc
> use is full of holes and problems. The FCC still holds the actual
> issueing of calls to it's office in Gettysburg. We can hardly tell FCC
> that Brian Kanter is the new ham call expert...hi

A much better method is to use standard IP over the airwaves and transmit a broadcast packet (such as to address xxx.xxx.xxx.255) which contains your callsign in ASCII text every 10 minutes.

In this way a monitoring station could learn the IP address associated with each callsign from the airwaves. I'm quite sure that the FCC wouldn't mind this.

It could also be used to automatically update your domain.txt file if your hostname was also included in the broadcast packet.

--
Wayne Schellekens, VE4WTS Internet: schellew@wu1.wl.aecl.ca
AECL Research AX.25: VE4WTS@VE4KV.#WPG.MB.CAN.NA

Whiteshell Laboratories   Twisted pair: (204)753-2311 x2317
PINAWA, MB Canada R0E 1L0   Fax: (204)753-2455

76. Re: Reducing bandwidth by including less

From: Douglas Fajardo <dfajardo@netcom.com>
Date: Wed, 8 Jun 1994 17:01:29 -0700 (PDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9406081607.A11054-0100000@netcom10>
Rendered body type: text/plain

On Mon, 6 Jun 1994, TAPR Network Special Interest Group wrote:
>
> Richard, AA1IB, writes:
>
> > RE: Reducing bandwidth by including less of previous messages,
> > proposed by Robert WB5CRG
> >
> > [Richard suggests that we summarize.]
>
> I agree. Summaries also allow the original poster to determine if they
> have been clear in their presentation - the other half of the
> "misquoted, taken out of context" coin. I also suggest that we can
> _always_ delete the header information. Some of these messages are
> half header.

   I agree that summarizing should be used where appropriate, but often an actual quote is needed when you are responding to a particular point. The author of the message will have to be the arbiter no matter what is done.

    HOWEVER, unless the subject is the way traffic is routed (special case:)), I agree that there is no need to including the full header in a response - the name of the original author, or the internet address should be sufficient.

*** DOUG

77. Re: Protocols and the FCC

From: Douglas Fajardo <dfajardo@netcom.com>
Date: Wed, 8 Jun 1994 17:26:34 -0700 (PDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9406081727.A11054-0100000@netcom10>
Rendered body type: text/plain

On Tue, 7 Jun 1994, TAPR Network Special Interest Group wrote:

> From: Tim Baggett <wbaggett@NMSU.edu>
> Subject: Re: Protocols and the FCC

<stuff deleted
>
> At what channel bit error rate would FEC be beneficial? Obivously you
> dont use FEC on a channel with 10^-6 BER because the 'extra' bits will
> reduce your actual thruput.
>
> I can just imagine what it would be like if the hams had FEC in their
> modems: They would be thrown up on all long links without even checking
> the BER to see if FEC would be beneficial (how can the average amateur
> determine the BER of such a backbone link easily?)

Don't forget to include the cost (in time) of re-transmitting a packet in evaluating the benifits of FEC. The BER on a radio channel is fairly noticable (on one local 2 mtr channel I measured retries on 25% of my outgoing packets!), and the cost of a single packet re-transmission on a 1200 baud simplex link is quite long - and may well justify FEC on every VHF link !
*** DOUG

78. Re: Protocols and the FCC

From: bruce@pixar.com (Bruce Perens)
Date: Wed, 8 Jun 94 18:10 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <m0qBYdm-0006fBC@mongo.pixar.com>
Rendered body type: text/plain

>From: schellew@wu1.wl.aecl.ca (Wayne Schellekens)
> A much better method is to use standard IP over the airwaves and
> transmit a broadcast packet (such as to address xxx.xxx.xxx.255) which

> contains your callsign in ASCII text every 10 minutes. [...]
> It could also be used to automatically update your domain.txt file if
> your hostname was also included in the broadcast packet.

I have no problem with an ID packet every 10 minutes, especially if
it can be piggybacked onto the end of an IP packet.

Updating the domain.txt from a broadcast implies a degree of trust...
It would be easy enough for an impostor to propogate some number of
bogus host names and addresses. Various kinds of spoofing might be
implemented this way.

        Bruce

79. Re: Protocols and the FCC

From: DJ Gregor <dgregor@bronze.coil.com>
Date: Wed, 8 Jun 1994 22:48:12 -0400 (EDT)
To: netsig@tcet.unt.edu
Message-ID: <199406090248.WAA05246@bronze.coil.com>
Rendered body type: text/plain

Wayne Schellekens, VE4WTS (schellew@wu1.wl.aecl.ca) said:

> A much better method is to use standard IP over the airwaves and
> transmit a broadcast packet (such as to address xxx.xxx.xxx.255) which
> contains your callsign in ASCII text every 10 minutes.
>
> In this way a monitoring station could learn the IP address associated
> with each callsign from the airwaves. I'm quite sure that the FCC
> wouldn't mind this.
>
> It could also be used to automatically update your domain.txt file if
> your hostname was also included in the broadcast packet.
>

I think that this is a *GREAT* idea. Even if we cannot get around having to
use AX.25 or CWID for a while, this would be an excellent way for new users to
learn who is on the channel and for others to see if a station is still up and
running. Let's come up with a format for the 'IP-ID' packets so we can
incorporate some stuff into NOS to use this.

DJ Gregor, N8QLB
dgregor@bronze.coil.com
"...oh, you use DOS, sorry to hear that..."

80. Sophisticated/Primer Style Routing

From: ssampson@sabea-oc.af.mil (Steve Sampson)
Date: Thu, 9 Jun 1994 00:08:44 -0500 (CDT)
To: netsig@tcet.unt.edu
Message-ID: <9406090508.AA15160@sabea-oc.af.mil>
Rendered body type: text/plain

I've seen various routing protocols suggested and they all sound very
sophisticated. Then I look at amateur networks and say: "why make it
so hard?" I did a short paper once on devising a network from one
University to another in Oklahoma. In thinking about routing I simply
chose a private IP address scheme which had gateways to the user at
each node. The node would use the Internet address 44.78.x.x on the
user side, but use a private IP address on the backbone side 10.0.0.x.

Since most state networks will be relatively small, the fancy routing
schemes are more a hinderance than a benefit. When jumping from one
network (manned by group X) to another (manned by group Y) it seems
easy enough to just make manual entries and forget the automation of
routing. If someone pops up on the backbone frequency, you don't want
to talk to them anyway. Routing on the user side is also easy, because
you can subnet each city or geographic area. In my case the user node
would only process 44.78.4.x addresses and ignore all others (who should
be on their local subnet frequency anyway).

The objective should be data transport speed over routing automation.
--
Steve

81. BER v Retries

From: djk@dirku.demon.co.uk (Dirk-Jan Koopman)
Date: Thu, 9 Jun 1994 10:42:58 +0200 (BST)

To: netsig@tcet.unt.edu
Message-ID: <m0qBgdW-0004g9C@dirku>
Rendered body type: text/plain

We have started to discuss BERs on this channel, but I wonder whether I am putting my questions correctly.

BERs are relevant in a pure Gaussian situation, but we don't live in that situation.

Amateur radio packet doesn't exist where, for the period of transmission of a packet, there is a pretty fair chance that it won't be tramped on by some other station. Commercial networks all seem to use fixed to mobile, multi freq working using some kind of slotted aloha technique. This means that there is a very good chance that a packet (actually part of a packet) will get through without being corrupted by others trying to transmit at the same time. This method would be wonderful if we could adopt it and then optimise it for BER and effective S/N ratio.

We are not like that (!) we use nasty, undisciplined, half duplex "CSMA" (ish). It seems to me that BER is irrelevant because the errors that occur are not single or double bit gaussian derived, but whole packet tramped on errors caused by the finely tuned "CSMA" algorithm that we use.

I have some questions:-

1. What is SS?

2. I get the impression that there is at least one, low cost, 1.2Ghz radio design out there with modem. I would appreciate details please.

Dirk g1tlh

82. Internet and the ARRL (Forwarded from Packet)

From: "Ackermann, John" <jra@lawdept.daytonoh.NCR.COM>
Date: Thu, 09 Jun 94 08:08:00 edt
To: 'NETSIG Mailing List' <netsig@tcet.unt.edu>
Message-ID: <2DF70684@lawgate.daytonoh.ncr.com>
Rendered body type: text/plain

k4egz@kd4mjv.#hwdfl.fl.usa.na wrote this to me, and I forward it to the group:
>From mvfma.ampr.org.!k4egz%k1lt Mon Jun 6 14:41:17 1994
Date: 05 Jun 94 20:01:00 UTC
Message-Id: <142060@mvfma.ampr.org.>
>From: k4egz@kd4mjv.#hwdfl.fl.usa.na
To: ag9v@n8acv.#day.oh.usa.noam
Subject: INFORMATIONAL
X-BBS-Msg-Type: P

>From: K4EGZ@KD4MJV.#HWDFL.FL.USA.NA
To : AG9V@N8ACV.#DAY.OH.USA

     JOHN: RE.YOUR COLUMN IN THE SPRING 1994 EDITION OF PACKET STATUS REGISTER YOU STATE IN PART: "SEVERAL FOLKS THOUGHT THAT THE INTERNET GATEWAY MAY BE IT".
     I RECENTLY LINKED UP WITH TWO OTHER HAMS ON 20 MTR PACTOR MODE AND BOTH EXPRESSED THE FEELING THAT ARRL SHOULD BE MORE INVOLVED PROVIDING US WITH DIRECT ACCESS TO INTERNET VIA PACKET RADIO OR HF DIGITAL.
     IN THE EVENT THAT EXTENDING INTERNET TO ALL HAMS WOULD REQUIRE A PAYMENT BY ARRL THE CONCENSUS WAS WE WOULD GLADLY CONTRIBUTE A NOMIMAL AMOUNT EITHER AS A CONTRIBUTION OR ON A MONTHLY FEE BASIS.
     IT WAS ALSO FELT THAT PROVIDING HAMS WITH INTERNET ACCESS WOULD NOT ADVERSELY EFFECT PACKET RADIO MODE OPERATIONS BUT ON THE CONTRARY WOULD TEND TO ENHANCE IT.
     K4EGZ @ KD4MJV.#HWDFL.FL.USA.NOAM
     ...73...MAX...K4EGZ

83. FW: Sophisticated/Primer Style Routing

From: "Ackermann, John" <jra@lawdept.daytonoh.NCR.COM>
Date: Thu, 09 Jun 94 08:21:00 edt
To: 'NETSIG Mailing List' <netsig@tcet.unt.edu>
Message-ID: <2DF70989@lawgate.daytonoh.ncr.com>
Rendered body type: text/plain

[Steve was discussing a simple IP-based routing scheme]

I tend to agree with the "simplicity-in-routing" concept. It seems to me

that protocols like RSPF and even RIP are most useful if a) the network is
total chaos, with no well-defined backbone and subnets that aren't fully
connected, or b) if the network is huge and very well defined.

Most of our ham subnets today look a lot like (a), but I <think> we're
moving away from that. As networks grow, they tend to evolve into a fairly
well-defined "backbone" with user-access switches at population centers.
 With some reasonable foresight in setting up IP subnets, routing shouldn't
be that tough: user stations have one route for local traffic, and a second
route that defaults everything else to the switch. The switch has routes to
other subnets in the general vicinity, and once you get a couple of hops
away, a single default route for each direction that the network goes.

Then, routing becomes as much a matter of administration as of protocols.

We've seen how difficult it is to implement routing protocols in an
unreliable RF network, and maybe the lesson to be learned is that we should
put more emphasis on network <design> so that we can use simpler, more
reliable, routing mechanisms.

John

84. Re: The Future of Packet (was: JNOS 1.10 future...)

From: agodwin@acorn.co.uk (Adrian Godwin)
Date: Thu, 9 Jun 94 10:44:27 +0100
To: netsig@tcet.unt.edu
Message-ID: <9406090944.AA20926@snark.acorn.co.uk>
Rendered body type: text/plain

>
> From: Klarsen <klarsen@acca.nmsu.edu>
> Subject: Re: The Future of Packet (was: JNOS 1.10 future...)
>
> > Internet makes ham packet radio rather mondane. Tim is a student
> training himself for a job. I am about to retire. But to both of us it is
> stupid to spend money on ham packet radio. We already have a lot more
> bandwidth now and it ain't ham radio but it's about ham radio.
>
> > So the effect of these tapr sigs may be to assure we who
> contribute to them will look back and say by by packet radio, I have
> found something better.
>
> karl k5di

It's a fair point, but it applies equally to pretty well all ham radio -
it's a pretty patchy way to communicate, if it's for communication's
sake. The telco offers long-distance conference calling and mobile
phones, but I still use the 70cm repeater.

Personally, I do it for fun. That changes the priorities and tradeoffs
when compared to the commercial and public-service network providers, but
it doesn't mean it isn't worthwhile to me. For the moment.

-adrian

85. Re: FW: Sophisticated/Primer Style Routing

From: bruce@pixar.com (Bruce Perens)
Date: Thu, 9 Jun 94 09:11 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <m0qBmhC-0005YwC@mongo.pixar.com>
Rendered body type: text/plain

>From: "Ackermann, John" <jra@lawdept.daytonoh.NCR.COM>
> [Steve was discussing a simple IP-based routing scheme]

> I tend to agree with the "simplicity-in-routing" concept. It seems to me
> that protocols like RSPF and even RIP are most useful if a) the network is
> total chaos, with no well-defined backbone and subnets that aren't fully
> connected, or b) if the network is huge and very well defined.

You forgot one:

c) There are mobile nodes in the system.

We shouldn't be treating networks as if they are all fixed stations. If
that is the case, all we're doing is copying the wireline network. This is
rather limited for people who are using _radio_.

I have a handheld TCP-IP platform now - a Baycom modem, HT, and HP100LX

palmtop running NOS. I can take it anywhere, but it doesn't handle the
routing problem adequately just yet.

There's some interesting work going on in the mobile-ip mailing list.

        Bruce Perens AB6YM

86. Re: Internet and the ARRL (Forwarded from Packet) INFORMATIONAL

From: Tim Baggett <wbaggett@NMSU.edu>
Date: Thu, 9 Jun 1994 10:28:18 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.87.9406091018.D24551-0100000@gauss>
Rendered body type: text/plain

On Thu, 9 Jun 1994, TAPR Network Special Interest Group wrote:

> From: "Ackermann, John" <jra@lawdept.daytonoh.NCR.COM>
> Subject: Internet and the ARRL (Forwarded from Packet)
> >From: k4egz@kd4mjv.#hwdfl.fl.usa.na

>   I RECENTLY LINKED UP WITH TWO OTHER HAMS ON 20 MTR PACTOR MODE AND
> BOTH EXPRESSED THE FEELING THAT ARRL SHOULD BE MORE INVOLVED PROVIDING
> US WITH DIRECT ACCESS TO INTERNET VIA PACKET RADIO OR HF DIGITAL.

As a gateway administrater, I feel I need to make a point that I tell the
locals: I am NOT an Internet service provider.

There are many such Internet service providers out there and I don't feel
that the amateurs need to compete with them.

At the present time, the AMPR net gateways are 'freeloaders' from larger
institutions such as Universities and corporations. Universities may not
have a direct byte for byte cost for using the Internet but many
corporations do pay for their internet usage in this manner (like
blackbox.com right Robert?). If the data generated by the Internet
gateways were to become significant, then I think we would see a huge
decrease in the number of gateways at commercial places. For this reason
I think Universities are and excellent place to install amateur gateways
since the tax payers have already paid for the internet link.

When obtaining permission to install NMSUGW here at New Mexico State
University, I was specifically told by networking that amateurs are NOT
to be allowed to connect to Internet hosts. If fact, they were not going
to even let me install the gateway until I told them we were running
1200/9600 bps (then they laughed at me and asked if I wanted a REAL job :-)

So, even thought this message did not originate from someone on this
list, I think we need to make sure some of the users come back into focus
with packet radio. Heck, we just got done discussing how we can get users
to help pay for packet networks. At $30 a month I think an Internet
service provider is a steal compared to a few 9600 nodes.

73
Tim

****
Tim Baggett, AA5DF   Electrical Engineering Student
                                      New Mexico State University
Internet: WBAGGETT@NMSU.EDU
AMPR: AA5DF@NMSUGW.AMPR.ORG   US Snail: 1805 Rentfrow Apt #1
(When on) AA5DF.AMPR.ORG   Las Cruces, NM 88001
****

87. TheNet X1J rev2

From: "David C. Bray" <TDCBR@chevron.com>
Date: 09 Jun 94 11:16:40 PDT
To: netsig@tcet.unt.edu
Message-ID: <199406091816.AA18996@portal.chevron.com>
Rendered body type: text/plain

To: NETSIG --INTERNET

FROM: David C. Bray   dcbr@chevron.com
      CITC/CSD   CTN 675-3838 Area Code 303

SUBJECT: TheNet X1J rev2
Hi,
  Well I discovered a bug in the revision 2 a month ago, and

have swapped messages with the provider(G8KBB). He said he
was not aware of any problem. I just saw a bulletin come
through confirming my findings. I have not see anything here
on it, so here is what I found:
The extra alias feature is not working correctly on TN-X1J rev.2,
this feature works just fine on the previous TN-X1J. This feature
allows the node to respond to connection requests of up to three
additional aliases, and automatically reroutes the connections to
the callsigns set up in the 3 slots of BBS, HOST, and DXCLUSTER.
Revision 2 attempts to reroute these connections, but corrupts
the user's callsign in the process. The final destination will
come back with a "BUSY" message because this non-legible callsign
has not passed callsign verification.
I have switched my nodes back to TN-X1J for now. There are some new
features provided with rev.2, so I hope it gets fixed.
    73s   -Dave-   N0ITS @ KB0CZV.#NWCO.CO

      email: dcbr@chevron.com

88. Re: BER v Retries

From: dkelly@nebula.tbe.com (david kelly)
Date: Thu, 9 Jun 94 13:27:51 -0500
To: netsig@tcet.unt.edu
Message-ID: <9406091827.AA19172@nebula.tbe.com>
Rendered body type: text/plain

> 1. What is SS?

Spread Spectrum?

73, David N4HHE
dkelly@nebula.tbe.com

89. Re: BER v Retries

From: kb7uv@panix.com (Andrew Funk)
Date: Thu, 9 Jun 1994 15:29:36 -0400
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <199406091929.AA13428@panix.com>
Rendered body type: text/plain

At 10:25 AM 6/9/94 CDT, djk@dirku.demon.co.uk (Dirk-Jan Koopman) wrote:
>
>Amateur radio packet doesn't exist where, for the period of transmission
>of a packet, there is a pretty fair chance that it won't be tramped on
>by some other station.

This simply isn't true, at least in the NYC area and in areas following NEDA
guidelines.

Yes, User Access freqencies are chaotic. However, for "backbone" links many
areas are using coordinated, protected, point-to-point RF links. These
links are where much of the higher-speed (>1200 bps) effort is going.
Therefore, discussion of techniques to improve throughput on this sort of a
link is appropriate.

However, it may be a good idea to specify whether particular proposed
techniques apply to protected links or are appropriate for the chaotic user
access frequencies.

73, Andy
--
Andrew Funk, KB7UV
ENG Editor -- Microwave Control
WCBS-TV Channel 2 News, New York

90. Re: Internet and the ARRL (Forwarded from Packet) INFORMATIONAL

From: bruce@pixar.com (Bruce Perens)
Date: Thu, 9 Jun 94 18:03 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <m0qBuzt-0007t9C@mongo.pixar.com>
Rendered body type: text/plain

I provide an Internet mail gateway (which nobody uses because there's
another one next door) and will provide interactive Internet access to
my locality once the LAN goes to 9600 baud hardware. I provide a 24-hour
connection: you would pay a service provider $1000/month for a leased
line and 24 hour service, the $30 fee is for intermittent dial-up service.

I think all Amateurs should be able to access the Internet by radio, but unfortunately there are too many legal hobbles for them to use _amateur_ radio to do that. Part 15 equipment works best as far as the law is concerned - most of our 10 GHz point-to-point systems would fit within the part 15 specifications, and would have sufficient range to build networks in metropolitan areas. This goes for some commercial 900 MHz spread-spectrum equipment as well.

Bruce

91. Re: Protocols and the FCC

From: "Mark Herson" <mherson@hudson.intac.com>
Date: Fri, 10 Jun 94 03:29:24 GMT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <2287.mherson@hudson.intac.com>
Rendered body type: text/plain

schellew@wu1.wl.aecl.ca (Wayne Schellekens) wrote:

> A much better method is to use standard IP over the airwaves and
> transmit a broadcast packet (such as to address xxx.xxx.xxx.255) which
> contains your callsign in ASCII text every 10 minutes.

What is "standard IP over the airwaves" ?

Is that using an ax25 attach into a tnc? If so, that still encapsulates ip into ax.25 and thus includes the callsign with every packet. A beacon every 10 minutes is not needed and only serves to generate qrm.

Is that using slip? Into what? A tnc in transparent mode? Again, you're running ax.25 with included callsigns. Slip into a 212 (or other asynchronous) modem? Never heard of anybody doing that!

Or, is it something else?

Regards, Mark

92. Re: TheNet X1J rev2

From: ahgroff@dz12.cca.rockwell.com (A.H.Groff)
Date: Fri, 10 Jun 94 07:37:16 CDT
To: netsig@tcet.unt.edu
Message-ID: <9406101237.AA14205@dz12.cca.rockwell.com>
Rendered body type: text/plain

---- X1J2 bug ---
I have also noted the bug, and am glad to have it confirmed...
AL, K0VM
ahgroff@dz12.cca.rockwell.com

93. IP over the air (was: Protocols and the FCC)

From: schellew@wu1.wl.aecl.ca (Wayne Schellekens)
Date: Fri, 10 Jun 1994 08:38:50 -0600 (CDT)
To: netsig@tcet.unt.edu
Message-ID: <9406101338.AA18688@wu1.wl.aecl.ca>
Rendered body type: text/plain

I wrote:
>> A much better method is to use standard IP over the airwaves and
>> transmit a broadcast packet (such as to address xxx.xxx.xxx.255) which
>> contains your callsign in ASCII text every 10 minutes.

Mark Herson replied:
> What is "standard IP over the airwaves" ?

I did not know what to call it, as I haven't done it yet. I am not that well versed with SLIP, but I believe that since it commonly used in a point-to-point link that it would not work over a shared medium (the airwaves).

> Or, is it something else?
What I was getting at is something like FSK encoding IEEE 802.3. This could be done (as Glenn did in the back of the ARRL Handbook) with an ethernet card which has a MAU (I hope I spelt that right) connector, to radios which can handle that data rate.

Now, not everyone can afford that data rate, so maybe we can slow down the ethernet card's speed somehow. And I'm not talking about costs of

the radio, rather the errors involved at the higher data rates. For
instance, I don't think that a 2 Mbps system would work efficient while
I'm bouncing down the highway at 100 kph (and yes, I would like to
operate mobile someday).

In summary, you would not use the old style tnc, rather an interface on
an ethernet card and a special radio.

> Regards, Mark
Likewise, Wayne.

--
Wayne Schellekens, VE4WTS   Internet: schellew@wu1.wl.aecl.ca
AECL Research   AX.25: VE4WTS@VE4KV.#WPG.MB.CAN.NA
Whiteshell Laboratories   Twisted pair: (204)753-2311 x2317
PINAWA, MB Canada R0E 1L0   Fax: (204)753-2455

94. Re: Standard IP over the Air

From: ssampson@sabea-oc.af.mil (Steve Sampson)
Date: Fri, 10 Jun 1994 10:12:37 -0500 (CDT)
To: netsig@tcet.unt.edu
Message-ID: <9406101512.AA03607@sabea-oc.af.mil>
Rendered body type: text/plain

Mark Herson <mherson@hudson.intac.com> wrote:
>
> What is "standard IP over the airwaves" ?
>

Many amateurs think you have to use AX.25 when actually you can use any
protocol you want. This is refered to in the rules as an unspecified code.
The problem with unspecified codes is that it is restricted from transporting
third-party information. For example a 10 GHz microwave link running
ethernet can't transport BBS data, but it can share data between two operators.
"Standard IP over the airwaves" means there is no AX.25 protocol between the
framing codes. It has only the data in the IP protocol (source and destination
addresses in 32 bit numbers) and requires some other FCC identification. In
this case a burst of raw ASCII every 10 minutes with your call will suffice.
Taken one step further, the burst may be encapsulated in UDP and a specific
port which can then add it to a table of IP addresses heard on the channel.
Or any such scheme which tries to make use of the FCC requirement in a
positive way, rather than just bragging as most ID's do.

The new FCC rules about packet (we've been waiting a couple years now!) should
open up packet radio protocols, but if not, most amateurs interested in data
transport will probably switch to Part 15 to get away from the restrictions.
1 Watt into a beam can be used to create some very good high speed networks
(ethernet) using commercial equipment that can be had off the shelf.

Steve, N5OWK

95. Re: Protocols and the FCC

From: bruce@pixar.com (Bruce Perens)
Date: Fri, 10 Jun 94 09:35 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <m0qC9Y0-0006GoC@mongo.pixar.com>
Rendered body type: text/plain

>From: "Mark Herson" <mherson@hudson.intac.com>

> What is "standard IP over the airwaves" ?

This is using a TNC in KISS mode connected to a slightly-modified
SLIP driver. The HDLC formatting of the TNC is preserved, but there
is no AX.25 encapsulation. What is transmitted is an HDLC-encoded
IP packet. There is no callsign, no AX.25 header.

Doing this with NOS or Linux is trivial. A slightly greater challenge
is to configure a station so that it knows to use ax.25 to talk to some
systems and not to others. Probably it should try "raw IP" first, and
then switch to ax.25 encapsulated IP if it can't get an ACK using raw
IP within some time limit. If encapsulation works it should then set
a bit in the route table that indicates that encapsulation should be
used on subsequent connections.

Of course where you have manually marked a route to use ax.25 or Netrom
encapsulation, the decision is already made.

        Bruce Perens AB6YM

96. Re: Internet Gateway

From: ddietz@rhi.hi.is (Donald Lee Dietz)
Date: Fri, 10 Jun 1994 22:22:17 +0000 (GMT)
To: netsig@tcet.unt.edu
Message-ID: <9406102222.AA26229@hengill.rhi.hi.is>
Rendered body type: text/plain

> From: bruce@pixar.com (Bruce Perens)
> Subject: Re: Internet and the ARRL (Forwarded from Packet) INFORMATIONAL
> To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
> Date: Thu, 9 Jun 94 18:03 PDT
>
> I provide an Internet mail gateway (which nobody uses because there's
> another one next door) and will provide interactive Internet access to
> my locality once the LAN goes to 9600 baud hardware. I provide a 24-hour
> connection: you would pay a service provider $1000/month for a leased
> line and 24 hour service, the $30 fee is for intermittent dial-up service.
>
...paragraph deleted...
>   Bruce
>
Hi Bruce. I'm stationed in Iceland and only have a Technician class
(no-code) license. I do run packet here from Keflavik to Reykjavik to
connect to the rest of the network through a BBS there. Problem is, the
only way off of the island is through an intermittent HF link to Norway,
or occasionally mainland (ie. Italy, France) Europe. We also have a
satellite gateway here which appears to be a little more reliable than the
HF link.

My question to you is, how can I use your gateway to forward packet
messages from my Internet connection into the packet network where your
gateway is located? How would I address the message, etcetera? Also,
where is your gateway located and how can I find others that may be closer
to my intended destination?

My questions come about because I've experimented with messages to and
from the US. In almost all cases they took from one to two weeks to
traverse the route in either one direction or the other. (That is if they
made it at all.) Some have gotten lost!

Thanks for any information you can provide.

73's de Don, N3KFH /TF8

x.25: ddietz@rhi.hi.is
ax.25: N3KFH @ TF3BBS.ISL.EU

97. Re: BER v Retries

From: djk@dirku.demon.co.uk (Dirk-Jan Koopman)
Date: Sat, 11 Jun 1994 12:15:10 +0200 (BST)
To: netsig@tcet.unt.edu
Message-ID: <m0qCR1r-0004gAC@dirku>
Rendered body type: text/plain

>
kb7uv@panix.com (Andrew Funk) wrote:
> >
> >Amateur radio packet doesn't exist where, for the period of transmission
> >of a packet, there is a pretty fair chance that it won't be tramped on
> >by some other station.
>
> This simply isn't true, at least in the NYC area and in areas following NEDA
> guidelines.
>
> Yes, User Access freqencies are chaotic. However, for "backbone" links many
> areas are using coordinated, protected, point-to-point RF links. These
> links are where much of the higher-speed (>1200 bps) effort is going.
> Therefore, discussion of techniques to improve throughput on this sort of a
> link is appropriate.
>
> However, it may be a good idea to specify whether particular proposed
> techniques apply to protected links or are appropriate for the chaotic user
> access frequencies.
>

I must apologise again for not stating my position clearly (yet again!).

The real problem, it has always seemed to me, is how do you improve the

throughput to the _user_.

Now there has been technology available for some years now (at greater or lesser expense) to provide high speed, point to point, links from one user area to another. This seems to me to be the right way to go for that particular task. All you need to do is decide where you need a link, agree to do it, sort out the finance, the sites, then build and install it (!).

But this doesn't address the really interesting issue for me, which is how do you provide the _users_, ie them's wot actually want to make use of the high speed network (or increasingly not as it appears from various comments made on here), with a decent high speed ie 9600-19200 baud service.

It is this area that we should be looking at, it is here that (in my view) the most useful work can be done. If we stick at 1200 straight 'CSMA' the users will give up and disappear in fairly short order now.

As you say, the user frequencies are chaotic, but this is only because of the stupid algorithms we are using. Let us move forward here TCP/IP is _NOT_ the answer, neither is AX25 as such. We should now look carefully at level 1 and then, perhaps, design a protocol that utilises the strengths and minimises the weaknesses of our medium.

If we are to address protocol issues at all can we start to look at broadcast or group communication protocols - after what are most people actually doing? Reading BBS news / DX cluster spots etc. All of these ADD to the chaos 'cos everybody _duplicates_ each other using VC (either TCP or straight AX25) single channel circuits - in other words wire technology.

This is patently inefficient, yet we don't do anything about it. We persist with demonstrably useless level 1 arrangements and put on top of that less than optimum level 2-4 software.

So to prime the discussion a bit can I recommend that you ftp the information on the Amoeba op. sys. from one of the following:-

```
europe ftp.cs.vu.nl      (192.31.231.42)  directory: amoeba
US     ftp.cse.ucsc.edu  (128.114.134.19) directory: pub/amoeba
```

in particular I suggest you look at the papers on the flip protocol and on group communications (but all of it is interesting, but the other papers aren't directly relevant).

You will notice that Andy Tanenbaum features on a lot of these papers (which should strike a chord or two for those interested in protocol issues!).

Regards

Dirk g1tlh

98. Re: BER v Retries

From: Tim Baggett <wbaggett@NMSU.edu>
Date: Sun, 12 Jun 1994 02:00:59 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.87.9406120259.F21557-0100000@gauss>
Rendered body type: text/plain

On Sun, 12 Jun 1994, TAPR Network Special Interest Group wrote:

> From: djk@dirku.demon.co.uk (Dirk-Jan Koopman)

> As you say, the user frequencies are chaotic, but this is only because
> of the stupid algorithms we are using. Let us move forward here TCP/IP
> is _NOT_ the answer, neither is AX25 as such. We should now look
> carefully at level 1 and then, perhaps, design a protocol that utilises
> the strengths and minimises the weaknesses of our medium.

I agree here 100%!

>
> If we are to address protocol issues at all can we start to look at
> broadcast or group communication protocols - after what are most people
> actually doing? Reading BBS news / DX cluster spots etc. All of these
> ADD to the chaos 'cos everybody _duplicates_ each other using VC (either

> TCP or straight AX25) single channel circuits - in other words wire
> technology.

But here I start having trouble with your thoughts. Suppose we have 5
people all receiving DX Cluster spots by 'some' broadcasting protocol
method. Each DX spot is transmitted only once, and each of the 5 users
receive the spot. Pretty efficent so far. But what happens if only one
user didn't receive the broadcast DX spot? The DX cluster will have no
way of knowing which users did or did not receive the DX spot. In this
sense a VC is still needed.

This is the same problem I ran across while recently researching Internet
MBOINE technology. Lost packets stay lost and dropped packets stay
dropped. I don't think users will tolerate missing DX spots.

(I'm only using the DX Cluster as an example. It is a perfect example
where a broadcast method would be great, but also in which there is no
feedback to know if the packet was received by one and all)

>
> You will notice that Andy Tanenbaum features on a lot of these papers
> (which should strike a chord or two for those interested in protocol
> issues!).
>

Ah, yes, ole Andrew. Spent many a LONG nights cramming that book into my
head before an exam! I dunno about striking a chord or two, but definatly
brings back those caffeine shakes, hihi!

73
Tim

BTW: The current thread on sending IP packets has some good merit IMHO. I
especially like the ideas of broadcasting (I guess to address 0.0.0.255)
plain ascii text for station identification and using this information for
routing information. Maybe we can create some higher level protocol to
take care of this local routing information that your station hears.

****
Tim Baggett, AA5DF   Electrical Engineering Student
                                      New Mexico State University
Internet: WBAGGETT@NMSU.EDU
AMPR: AA5DF@NMSUGW.AMPR.ORG   US Snail: 1805 Rentfrow Apt #1
(When on) AA5DF.AMPR.ORG   Las Cruces, NM 88001
****

99. Re: Protocols and the FCC

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Sun, 12 Jun 1994 07:15:14 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9406120759.B26831-0100000@kazak>
Rendered body type: text/plain

> >
> > Tim, I want to be very sure that you and others understand that it is
> > not necessary to encapsulate TCP/IP inside of another protocol.
> >
>
> This is my reason for prefering THENET X1J since it allows IP to be
> transmitted as IP and NetRom to be transmitted as NetRom without the
> encapsulation. (BTW, TCP/IP without AX25 does work well and fast!).
> Also, there was a comment earlier about there seems to be a large
> consensus that TCP/IP is the answer to our problems. I'm not sure my
> self. I stick to my suggestions that each protocol has some very good
> advantages. We somehow need to combine these advantages into a protocol
> we can move into the next century with.
>
> 73
> Tim
        Tim I don't want to move into the next century with netrom and
AX.25 but that is what will happen unless we get relief from the fcc to
use the x1j node as a ip server. I expect we might see some thru-put
improvement using ip over netrom at 9.6k. At 1.2k I don't think the
actual thru-put will change much. I saved that note from Steve. It is
very good!
 -karl

100. Re: IP over the Air

From: ssampson@sabea-oc.af.mil (Steve Sampson)
Date: Sun, 12 Jun 1994 09:36:41 -0500 (CDT)
To: netsig@tcet.unt.edu
Message-ID: <9406121436.AA17392@sabea-oc.af.mil>
Rendered body type: text/plain

> We should now look carefully at level 1 and then, perhaps, design a protocol
> that utilises the strengths and minimises the weaknesses of our medium.

The competition with data links in amateur radio (for pure enjoyment) is the Internet. Internet rates are now cheaper than cable TV. For example in OKC you can get a dialup SLIP for $20 a month, or receive mail for $10 a month. This is a whole lot cheaper than buying radio equipment. So the question really is "Why do we need amateur radio data links?" The answer hasn't been defined yet. Given that the data content on these radio links is greatly restricted due to government secrecy laws, and control of the citizens to prevent espionage or otherwise ruin our cherished offensive capability, the purpose of these radio links is much in question. If you can't say Ka-Ka words, or specify prices, or give out 900 numbers without fear of retaliation, these will always be referred to as "toy networks."

My military experiance has been that, if you want reliability, then the radio network should be fully coordinated. If someone jumps in and tries to become a member of the net, then the net control makes a manual entry to allow them in, or targets the unit for destruction. Seeing how most amateurs cannot, or refuse to adjust their deviation (I'm as guilty as the rest at times) the biggest boon will come from radios which have serial ports (using some defined standard such as TTL or RS-552, etc) which are adjusted at the factory or by technicians. All timing should be decided by software and have no manual control. I'm always amazed at religious arguments about what Persist/Slot or FRACK to use. "We use FRACK 1 and RETRIES 99 because that's what Jim-Bob recommends, and he's a God in packet radio, would want it that way, etc." Our own local loser recommends "Persist 255, Slot 0" to everyone he meets! Power control is also a major issue. The radio must respond to "reduce power" commands. From here you may then decide on level 1 and 2 parts of the protocol stack. Many ask "What speed should we operate at?" The answer may require some reduction in speed to operate reliably. The shorter the pulses, the wider the receiver, and the greater the multipath. Spread Spectrum (SS) works very well for the military. They use L-Band (@ 1 GHz) and some aircraft use two microwave style horn antennas to get omni-directional coverage. The two competing technologies are TDMA and CDMA or a hybrid of both.

What I would like to see are developments in network technology which can enhance communications during a disaster (minor or major). For example, the Civil Air Patrol needs a network, the Forest Service needs a network, etc. The first thing in after the smoke jumpers should be a network on the hill to provide voice and data to each team. Something futuristic rather than the old analog repeater which will probably be jammed by lonesome hams with a bent towards chaos. Something also *affordable* i.e., mass produced.

This is about the only usefulness I can think of for amateur radio development. Other than just to hook city A up with city B so they can discuss what the rain is doing to *their* lawn...

Steve, N5OWK

101. Re: BER v Retries

From: DJ Gregor <dgregor@bronze.coil.com>
Date: Sun, 12 Jun 1994 17:40:32 -0400 (EDT)
To: netsig@tcet.unt.edu
Message-ID: <199406122140.RAA11651@bronze.coil.com>
Rendered body type: text/plain

>
> From: Tim Baggett <wbaggett@NMSU.edu>
> Subject: Re: BER v Retries
> To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
> Date: Sun, 12 Jun 1994 02:00:59 -0600 (MDT)
>
[[stuff deleted]]
>
> >
> > If we are to address protocol issues at all can we start to look at
> > broadcast or group communication protocols - after what are most people
> > actually doing? Reading BBS news / DX cluster spots etc. All of these
> > ADD to the chaos 'cos everybody _duplicates_ each other using VC (either
> > TCP or straight AX25) single channel circuits - in other words wire
> > technology.

>
> But here I start having trouble with your thoughts. Suppose we have 5
> people all receiving DX Cluster spots by 'some' broadcasting protocol
> method. Each DX spot is transmitted only once, and each of the 5 users
> receive the spot. Pretty efficent so far. But what happens if only one
> user didn't receive the broadcast DX spot? The DX cluster will have no
> way of knowing which users did or did not receive the DX spot. In this
> sense a VC is still needed.
>
> This is the same problem I ran across while recently researching Internet
> MBOINE technology. Lost packets stay lost and dropped packets stay
> dropped. I don't think users will tolerate missing DX spots.
>
> (I'm only using the DX Cluster as an example. It is a perfect example
> where a broadcast method would be great, but also in which there is no
> feedback to know if the packet was received by one and all)
>

Well, who says you can't have an _acknowledged_ broadcast protocol. This could be a cross between broadcast and VC with the best of both.

Let's say Jim wants to check into his local DX cluster. His DX Cluster client sends a STARTDXSPOT to the DX Cluster server. The server would then reply with a DXSPOTSTARTED. If Jim's client does not get the DXSPOTSTARTED within a certain period of time, it resends the STARTDXSPOT message. Jim's computer is now listening for DXSPOT messages from the server, and it is maybe occasionally sending a STILLHERE message to the server. When the server has a DX spot to send to everybody, it sends it as a DXSPOT message to the broadcast address. This could be a general broadcast address, or one just for the DX Cluster. The stations then respond with a GOTDXSPOT ##### to the server. Since the server has a list of everybody that is supposed to receive the DX spot messages, it can wait for a GOTDXSPOT message, or if needed resend the DXSPOT message to the broadcast address or just to the one person that did not respond. And when Jim logs off, his client sends a STOPDXSPOT to the server and waits for it to reply with a DXSPOTSTOPPED message.

This is just an example, it does not include all of the retrasmission of packets and such. A protocol like this would be VERY easy to implement, it simply has to maintain a list of who is listening for the messages, and occasionally make sure that everyone is still listening. When it needs to send a message, it broadcasts it, and waits for replies. People would be 'checked off' who replied, and those that did not would have it retransmitted.

This is simple enough to use AX.25 UI frames with a special PID. It may take one or two kilobytes of code to implement a client, so it could easily be included in TNC firmware.

DJ Gregor, N8QLB
dgregor@bronze.coil.com
"...oh, you use DOS, sorry to hear that..."

102. Serious Talk

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Sun, 12 Jun 1994 16:39:18 -0600 (MDT)
To: Sig Networking <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9406121650.A5063-0100000@kazak>
Rendered body type: text/plain

I think it's about time for some serious talk about what we can do today to make packet radio more fun for the users. All this ber and protocal are nice to write 1,000 words about, but they will just not get the job done.

Steve N5OWK and I have been talking off line and it is sure certain there are loads of things this SIG can do about the REAL problems out there on the NETWORK. So lets get off the fun stuff and talk about how tapr and us can get things going better. Here are a few things we can do and not work up a sweat over:

1. Tell everyone to start with a setting of persistance 64 and delay or whatever their tnc calls it 100 milliseconds. Too many hams are discovering a persistance=255 delay=0 will let THEM get thru. Problem is they are the only ones getting thru...

2. Talk up the idea of having 2 tnc's and 2 radios and 2 antenna's at EVERY site as soon as possible. This step alone can make a 1200 baud link seem like a new system with amazing speed! Of course the 2 radios are on different bands.

3. When you convert to a 9600 buad network don't make the same error we did when we put up the first 145.01 network. I hate to see ANY network with a node having more than ONE route listed! (In the case of the wonderful g8bpq switch it's one route per port).

4. Use the X1J node software when a tnc-2 is used as a node. This allows the tcp/ip crowd to use it as a gateway and do away with all those routes!

This list can go on for many more issues. But notice that cost is a major consideration. Except for 2. above it doesn't cost anything to do what I have listed, or not very much anyway.

So lets add to this list what YOU think is important that we can do tomorrow to help the ham packet network.

73 de karl k5di

103. Re: Serious Talk

From: Robert Wood <w5robert@blkbox.COM>
Date: Sun, 12 Jun 1994 23:30:24 -0500 (CDT)
To: netsig@tcet.unt.edu
Message-ID: <9406122330.aa15858@blkbox.COM>
Rendered body type: text/plain

I agree. I've found several PK users operating with the PP command set to off. I'm not sure why this option is even given - it seems somewhat rude to be operating that way. Along the line of TXD, I kept a message off the BBS system that seems to work well :

>From : KC4FWC
To : USERS@ALLUS
Date/time : 22-Jan 23:25
Title : Low TXDelay Settings

I just read a message from N7FSP about setting node/BBS TXDelay very low. Yes, the purpose of the transmitter delay setting is to delay the transmitter before the packet data is sent. But think about this. maybe about 25% of all people on packet are using a rig which has a T/R relay. In some models, the rig can not instantly switch from TX to RX - instead, there is a slight delay. So let's say I send data to a short-TXDelay'd node. Then, the node comes back to me with an <RR> frame. But while it was sending the frame to me, my rig was in the process of switching from TX to RX. Understand what I'm saying? Case number two. Again, let's say I have an older type rig which is relay T/R switch. When I key the microphone down, it takes a slight amount of time to bring the transmitter up to full power. If my TXDelay is set to about 10, the rig may have only put out a few watts when it is rated at 25. If my TXDelay is set to a more reasonable value, such as 40, it gives it time to get the power up, then sends data. Now I do agree that high speed nodes, such as 9600 baud be set at 100 - 150 ms. but 1200 baud nodes should be set slightly higher. And the time in network "clogging" is so insignificant that you may be able to pass a few characters more per year than before. I have 5 nodes - four being 1200 baud, and I have run them at 400 ms. delay for about 5 years now, and it works great. As I said before, there may be only a small amount of users that have older rigs, but as a node operator, I have to consider everyone. 73..KC4FWC

_____
73's Robert WB5CRG

104. Re: Serious Talk

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Mon, 13 Jun 1994 07:32:28 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9406130743.C16365-0100000@kazak>
Rendered body type: text/plain

On Mon, 13 Jun 1994, TAPR Network Special Interest Group wrote:

> From: Robert Wood <w5robert@blkbox.COM>
> Subject: Re: Serious Talk
> To: netsig@tcet.unt.edu
> Date: Sun, 12 Jun 1994 23:30:24 -0500 (CDT)
>
> I agree. I've found several PK users operating with the PP command

> set to off. I'm not sure why this option is even given - it seems

Me too Robert. I can't think of a single case where persistance should be set at 255. But you have put your finger on a real problem. How can we tell the packet world what to do when what we want them to do is called so many things? I am certain that most if not all hams want to share the network with others. They set PP to off because then things seem to work better...hi

> somewhat rude to be operating that way.   Along the line of TXD,
> I kept a message off the BBS system that seems to work well :
>
> >From   : KC4FWC
> To   : USERS@ALLUS
> Date/time   : 22-Jan 23:25
> Title   : Low TXDelay Settings
>
> I just read a message from N7FSP about setting node/BBS TXDelay very
> low. Yes, the purpose of the transmitter delay setting is to delay
> the transmitter before the packet data is sent.

(much deleted)

That is a good idea Robert but there are 2 sides to that issue. I generally set the nodes I run to the lowest value consistant with getting plenty of flags through so the receiving node can decode the packet. TXD has more to do with your own radio than someone elses radio. You can use another timer to delay your response to a packet.

Anyway what I do is start with about 400 milliseconds of txd and then start decreasing it at 50 msec incriments until the node I'm talking to starts to re-try on my packets. If your using nos to run this test it is very easy to monitor what is happening.

When re-trys start I reset txd to 50 msec higher. This is what I run on the node.

If I ran the nodes at some large txd it would slow down an already slow network. I don't think a user with a super slow t/r relay will have a problem. True he might miss the nodes transmission because he isn't listening yet. Let me look at the book and find the timer command I'm looking for. I would rather the node sit quiet longer than usual than have it sending tons of flags before every transmission.

>
> _____________________________________
> 73's   Robert WB5CRG
>
>
73, de karl k5di

105. Re: Serious Talk

From: Tim Baggett <wbaggett@NMSU.edu>
Date: Mon, 13 Jun 1994 11:14:04 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.87.9406131104.F807-0100000@gauss>
Rendered body type: text/plain

On the subject of SLOT and PERSISTANCE, I believe the SLOT should be set to the number of transmitters on the channel to provide an equal probability that one transmitter will transmit? Is my approach on here correct?

73
Tim

****
Tim Baggett, AA5DF   Electrical Engineering Student
                                      New Mexico State University

Internet: WBAGGETT@NMSU.EDU
AMPR: AA5DF@NMSUGW.AMPR.ORG   US Snail: 1805 Rentfrow Apt #1
(When on) AA5DF.AMPR.ORG   Las Cruces, NM 88001
****

106. Re: Internet Gateway

From: bruce@pixar.com (Bruce Perens)
Date: Mon, 13 Jun 94 12:34 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>

Message-ID: <m0qDHlv-0006F6C@mongo.pixar.com>
Rendered body type: text/plain

>From: ddietz@rhi.hi.is (Donald Lee Dietz)
> how can I use your gateway to forward packet
> messages from my Internet connection into the packet network...

To contact users of the "BBS network" via Internet, FTP to
"arasmith.com" and retrieve the file /pub/n0ary.bbs/gateway_info .
You'll have to "register" on N0ARY before you use it as a gateway.
I think Bob N0ARY is the author of the Internet to BBS gateway running
on that system, and you can get the source and run it on Linux.

The gateway I'm running on my station connects only to the TCP/IP
network, not the BBS net. To mail to my station from the Internet,
you'd simply address your message to bruce@ab6ym.ampr.org . The mail
gets routed correctly because the Internet domain name database
contains instructions on how to route mail to my station from the
Internet (in the form of an "MX record"). If you have a radio route to
my station, that overrides the Internet route. There are a few other
users on my local net who can get their mail through my station this
way.

This is how all Internet to packet mail routing should be done. No figuring
out which gateway to use, etc., the mail delivery program figures that out
for you.

        Bruce Perens AB6YM

107. Re: BER v Retries

From: bruce@pixar.com (Bruce Perens)
Date: Mon, 13 Jun 94 13:03 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <m0qDIDy-0006F6C@mongo.pixar.com>
Rendered body type: text/plain

>From: Tim Baggett <wbaggett@NMSU.edu>
> Let us move forward here TCP/IP is _NOT_ the answer

You are absolutely right as long as you are talking about 1200-baud
networks. Go ahead and design a better protocol for those. I'll
go to higher speed equipment so that I can run TCP/IP. The applications
I want to use don't work at 1200 baud anyway.

We really can't talk about packet radio as a monolithic application. There
are two tracks - one that will be staying at 1200 baud, and another that
will be ramping through ever-higher speeds. For higher speeds, TCP/IP seems
to be appropriate. After all, the higher speeds need more sophisticated
computer equipment, and that equipment can run TCP/IP without additional
cost. TCP/IP is the only Amateur protocol that can run dynamic routing
on a second-by-second basis to take advantage of such things as satellites
coming over a horizon and rapidly-varying protocol conditions. TheNet
is getting closer, but that's because TheNet is implementing IP-like
features.

        Bruce Perens AB6YM

108. Re: Serious Talk

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Mon, 13 Jun 1994 14:39:04 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9406131423.B21746-0100000@kazak>
Rendered body type: text/plain

On Mon, 13 Jun 1994, TAPR Network Special Interest Group wrote:

> From: Tim Baggett <wbaggett@NMSU.edu>
> Subject: Re: Serious Talk
> To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
> Date: Mon, 13 Jun 1994 11:14:04 -0600 (MDT)
>
>
> On the subject of SLOT and PERSISTANCE, I believe the SLOT should be set
> to the number of transmitters on the channel to provide an equal
> probability that one transmitter will transmit? Is my approach on here
> correct?

        No. SLOT is set to an arbitrary number of seconds that has been
found to be 100 milliseconds for best operation. This function says "if I

am not allowed to transmitt by PERSISTANCE, I will will wait 1 SLOT time
and try again". Of course if the channel is busy I won't transmitt
either; this is called the DCD function.

        If you make SLOT=0 then it means that you will transmitt any time
you want to when the channel clears. And you will have the channel most
of the time since stations set up properly will never get in. They will
get irritated and quit.

-karl

109. Broadcast Protocols

From: kb7uv@panix.com (Andrew Funk)
Date: Mon, 13 Jun 1994 18:03:05 -0400
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>,
        Godon Beattie <n2dsy@mtuxj.att.com>
Message-ID: <199406132203.AA24181@panix.com>
Rendered body type: text/plain

At 04:45 PM 6/12/94 CDT, DJ Gregor <dgregor@bronze.coil.com> wrote:

>Well, who says you can't have an _acknowledged_ broadcast protocol. This could
>be a cross between broadcast and VC with the best of both.

this is *exactly* the benefit of the broadcast protocol that Gordon Beattie,
N2DSY, specified at one of the ARRL Computer Networking Conferences (I
forget which year). I understand that AD2H implemented it in C.

The broadcasts are send as UI frames. Receiving stations which desire
complete reliability may maintain a connection with the broadcast server
(not ecessarily over the same path as the broadcasts), and use the
connection to request "fills".

My understanding of the reason this protocol has not received much attention
is a bug in most TNC-2 and compatible firmware having to do with receiving
the NULL character contained in UI frames while connected (MHeard ON). I'm
told that the protocol could be modified slightly to eliminate the need for
the NULL character, but to my knowlege this hasn't happenned.

Anyone interested in this protocol can contact Gordon, N2DSY, directly via
the Internet: <n2dsy@mtuxj.att.com>.

73, Andy
--
Andrew Funk, KB7UV
ENG Editor -- Microwave Control
WCBS-TV Channel 2 News, New York

110. Re: Broadcast Protocols

From: Greg Jones <gjones@tenet.edu>
Date: Mon, 13 Jun 1994 22:21:41 -0500 (CDT)
To: netsig@tcet.unt.edu
Message-ID: <199406140321.WAA21707@Kay-Abernathy.tenet.edu>
Rendered body type: text/plain

According to TAPR Network Special Interest Group:
> From: kb7uv@panix.com (Andrew Funk)
> Subject: Broadcast Protocols
> To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>,
> Date: Mon, 13 Jun 1994 18:03:05 -0400
>
> this is *exactly* the benefit of the broadcast protocol that Gordon Beattie,
> N2DSY, specified at one of the ARRL Computer Networking Conferences (I
> forget which year). I understand that AD2H implemented it in C.
>

We have a very well defined and operational broadcast method being used on
the satellites. Just a matter of writing the necessary server side in order
to take advantage of the several user client software packages available.
even under windows now. The specs are out there - just need someone to
write the FTL0 server.

Greg

111. Re: Broadcast Protocols

From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
Date: Tue, 14 Jun 94 09:51:55 PDT

To: netsig@tcet.unt.edu
Message-ID: <9406141651.AA24157@hanko.MENTORG.COM>
Rendered body type: text/plain

> From: Greg Jones <gjones@tenet.edu>
> Subject: Re: Broadcast Protocols
> To: netsig@tcet.unt.edu
> Date: Mon, 13 Jun 1994 22:21:41 -0500 (CDT)
>
> According to TAPR Network Special Interest Group:
> > From: kb7uv@panix.com (Andrew Funk)
> > Subject: Broadcast Protocols
> > To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>,
> > Date: Mon, 13 Jun 1994 18:03:05 -0400
> >
> > this is *exactly* the benefit of the broadcast protocol that Gordon Beattie,
> > N2DSY, specified at one of the ARRL Computer Networking Conferences (I
> > forget which year). I understand that AD2H implemented it in C.
> >
>
> We have a very well defined and operational broadcast method being used on
> the satellites. Just a matter of writing the necessary server side in order
> to take advantage of the several user client software packages available.
> even under windows now. The specs are out there - just need someone to
> write the FTL0 server.

Where are the specs available?

   ... Hank - w0rli

112. Re: BER v Retries

From: agodwin@acorn.co.uk (Adrian Godwin)
Date: Tue, 14 Jun 94 17:54:10 +0100
To: netsig@tcet.unt.edu
Message-ID: <9406141654.AA25185@snark.acorn.co.uk>
Rendered body type: text/plain

> From: djk@dirku.demon.co.uk (Dirk-Jan Koopman)
> Subject: Re: BER v Retries
>
> As you say, the user frequencies are chaotic, but this is only because
> of the stupid algorithms we are using. Let us move forward here TCP/IP
> is _NOT_ the answer, neither is AX25 as such. We should now look
> carefully at level 1 and then, perhaps, design a protocol that utilises
> the strengths and minimises the weaknesses of our medium.
>

What do you see as the deficiencies of the above protocols ?

While neither do a perfect job in our current system, if you're
going to discard them, you have to be sure that you aren't throwing
the baby out with the bathwater. It's worth considering what you're
trading off before starting again from scratch.

In the case of TCP/IP
  + Established protocols and applications
  - uncorrected high BER links cause end-to-end retries
    leading to throughput collapse
  - no reliable (connected-mode) broadcasts (but perhaps someone
    can bring me up to date on IP multicasting)

In the case of AX.25 :

  + Installed base
  - high error rates cause congestion collapse
  - no reliable (connected-mode) broadcasts
  - lack of scaleable higher level networking protocols

So both suffer primarily from the effects of high packet loss rates -
AX.25 through badly controlled retry levels, and TCP/IP through the
assumption that packet loss is due to congestion rather than errors.

> This is patently inefficient, yet we don't do anything about it. We
> persist with demonstrably useless level 1 arrangements and put on top of
> that less than optimum level 2-4 software.
>

Fair comment. However, some of the deficiencies of the level 2-4 software
could be addressed by repairing the level 1 arrangements. Arguably,

building higher levels that are less sensitive to lower-level failures
is a possible alternative to building low BER level 0 and level 1
systems, which appears to be too expensive for amateurs.

> So to prime the discussion a bit can I recommend that you ftp the
> information on the Amoeba op. sys. from one of the following:-
>
> europe ftp.cs.vu.nl   (192.31.231.42) directory: amoeba
> US   ftp.cse.ucsc.edu (128.114.134.19) directory: pub/amoeba
>
> in particular I suggest you look at the papers on the flip protocol and
> on group communications (but all of it is interesting, but the other
> papers aren't directly relevant).
>

Interesting stuff, but can you plan a worldwide network on it ?
It would be great fun to build a local area system and play with the
concepts, but I think you'd need to do that thoroughly before you
tried to sell it to the amateur networking world.

Sadly, incremental changes are generally a lot less painful and
more popular than radical replacement.

-adrian

113. Re: Serious Talk

From: agodwin@acorn.co.uk (Adrian Godwin)
Date: Tue, 14 Jun 94 17:23:26 +0100
To: netsig@tcet.unt.edu
Message-ID: <9406141623.AA25173@snark.acorn.co.uk>
Rendered body type: text/plain

> From: Klarsen <klarsen@acca.nmsu.edu>
> Subject: Serious Talk

> > 2. Talk up the idea of having 2 tnc's and 2 radios and 2
> antenna's at EVERY site as soon as possible. This step alone can make a
> 1200 baud link seem like a new system with amazing speed! Of course the 2
> radios are on different bands.

I think you need to put this in context : for example, two-frequency
backbone sites may be reasonable, since the structure is a string of
stations. But the same strategy applied to user sites may not help much,
since if directional aerials are used to build a mesh, you'll require
a level of reliability of all the stations that is barely realizable
at a bbs-level system.

I assume you don't mean 2-frequency user stations with non-directional
aerials - I can't see any advantage to that.

-adrian

114. Re: Broadcast Protocols

From: Greg Jones <gjones@tenet.edu>
Date: Tue, 14 Jun 1994 20:29:57 -0500 (CDT)
To: netsig@tcet.unt.edu
Message-ID: <199406150129.UAA00798@Kay-Abernathy.tenet.edu>
Rendered body type: text/plain

According to TAPR Network Special Interest Group:
> From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
> Subject: Re: Broadcast Protocols
> To: netsig@tcet.unt.edu
> Date: Tue, 14 Jun 94 09:51:55 PDT
>
> Where are the specs available?
>
>   ... Hank - w0rli
>

I am not in Austin right now so I don't have access to my various proceedings.
There have been a number of AMSAT proceedings and such. Best bet is to
contact Jeff Ward, K8KA/G0?? at UoSat and ask him what the best references
are available. His address is J.W.Ward@ee.surrey.ac.uk. He should be able
to say what the latest info is and where it was published.

Before I left UoSAT Jeff gave me a disk with all the docs of various things
on it. I have not had a chance in the last year to dig through them in

great depth, but they had a lot of things on it. Mostly the older
publications. So - there are some newer things in the current server than
included in the info I have - such as hole filling.

Greg

115. BER v Retries

From: glg@balrog.k8lt.ampr.org (Gary L. Grebus)
Date: Tue, 14 Jun 94 23:53 EDT
To: netsig@tcet.unt.edu
Message-ID: <m0qDm2y-00074XC@balrog.k8lt.ampr.org>
Rendered body type: text/plain

>As you say, the user frequencies are chaotic, but this is only because
>of the stupid algorithms we are using. Let us move forward here TCP/IP
>is _NOT_ the answer, neither is AX25 as such. We should now look
>carefully at level 1 and then, perhaps, design a protocol that utilises
>the strengths and minimises the weaknesses of our medium.
>
>If we are to address protocol issues at all can we start to look at
>broadcast or group communication protocols - after what are most people
>actually doing? Reading BBS news / DX cluster spots etc. All of these
>ADD to the chaos 'cos everybody _duplicates_ each other using VC (either
>TCP or straight AX25) single channel circuits - in other words wire
>technology.

One approach to this problem is to fix level 1 for user
access. This is being done successfully in many places by using full-duplex
repeaters (i.e. the data equivalent of voice repeaters).

Another approach is to use a level 2 protocol that incorporates
collision avoidance. Karn's MACA protocol comes to mind, but there
have been others published. To the best of my knowledge there has
never been any widespread testing of this sort of protocol.

Some network applications do involve sending the same data to many
stations. And that might be done more efficiently using application
layer protocols that assume a broadcast model (I say "might" because
the low reliability of packet radio broadcasts invalidates a lot of
assumptions.) But, there's nothing to prevent doing broadcast or
multicast communications over IP or AX.25 UI frames.

In general, what's needed more than new protocols is for people to put
some code where there mouth is. Prototype some of the existing ideas
(or new ones), collect a group of testers, test, and measure the
results.

/gary
K8LT

116. FW: Sophisticated/Primer Style Routing

From: glg@balrog.k8lt.ampr.org (Gary L. Grebus)
Date: Wed, 15 Jun 94 00:21 EDT
To: netsig@tcet.unt.edu
Message-ID: <m0qDmTh-00074XC@balrog.k8lt.ampr.org>
Rendered body type: text/plain

>[Steve was discussing a simple IP-based routing scheme]

And AG9V comments:
>
>I tend to agree with the "simplicity-in-routing" concept. It seems to me
>that protocols like RSPF and even RIP are most useful if a) the network is
>total chaos, with no well-defined backbone and subnets that aren't fully
>connected, or b) if the network is huge and very well defined.

Dynamic routing is most useful in networks with redundant paths, provided
the protocols are designed to handle switching correctly.

They're also useful to work around user port outages without end users
having multiple addresses.

The second case you mention (large networks) is also realistic. At some
point, the administrative effort of keeping everything in sync
becomes painful. Some backbone routing tables around here include on the
order of 50 subnets and getting changes made smoothly is non-trivial.

Plus, I really hate to expend manual effort on any task I can get the

computer to do for me :-)

/gary
K8LT

117. Broadcast Protocols

From: glg@balrog.k8lt.ampr.org (Gary L. Grebus)
Date: Wed, 15 Jun 94 00:29 EDT
To: netsig@tcet.unt.edu
Message-ID: <m0qDmbg-00074XC@balrog.k8lt.ampr.org>
Rendered body type: text/plain

> From: Greg Jones <gjones@tenet.edu>
> We have a very well defined and operational broadcast method being used on
> the satellites. Just a matter of writing the necessary server side in order
> to take advantage of the several user client software packages available.
> even under windows now. The specs are out there - just need someone to
> write the FTL0 server.

The PACSAT protocols were first published in the 9th ARRL CNC
Proceedings (1990). Not sure if there have been any updates.

/gary

118. Re: Serious Talk

From: dreamer@lhaven.UUmh.Ab.Ca (Lawrence *The Dreamer* Chen)
Date: Tue, 14 Jun 1994 11:28:05 -0400
To: netsig@tcet.unt.edu
Message-ID: <9406141528.5e8k@lhaven.UUmh.Ab.Ca>
Rendered body type: text/plain

Hi TAPR (TAPR Network Special Interest Group), in <9406140051.AA171494@tcet.unt.edu> on Jun 13 you
wrote:

> From: Klarsen <klarsen@acca.nmsu.edu>
> On Mon, 13 Jun 1994, TAPR Network Special Interest Group wrote:
>
> > From: Tim Baggett <wbaggett@NMSU.edu>
> >
> > On the subject of SLOT and PERSISTANCE, I believe the SLOT should be set
> > to the number of transmitters on the channel to provide an equal
> > probability that one transmitter will transmit? Is my approach on here
> > correct?
>
>   No. SLOT is set to an arbitrary number of seconds that has been
> found to be 100 milliseconds for best operation. This function says "if I
> am not allowed to transmitt by PERSISTANCE, I will will wait 1 SLOT time
> and try again". Of course if the channel is busy I won't transmitt
> either; this is called the DCD function.
>
>   If you make SLOT=0 then it means that you will transmitt any time
> you want to when the channel clears. And you will have the channel most
> of the time since stations set up properly will never get in. They will
> get irritated and quit.
>
Then there's those of us that run things like SLOT=1000 (1 second), and
PERSISTANCE=32 (1/8 of a chance).

When things aren't too busy....we still get onto the channel, but when its real
busy....our systems grind to a halt.

Its on the other extreme of being friendly on the channel, but a while back it
was suggested as a value to for NOS machines that coexist with the BBSs on the
forwarding channel.

Of course, somewhere else along the link...somebody decided that they weren't
going to find a separate frequency for their area for users....just that they
didn't want bulletins being forwarded on the backbone.....its come down to time
restricted forwarding....but its restricted to whenever a user isn't awake to
use the system. Its kind of like Zone Mail Hour for Fidonet, except in the
amount of bulletins you can exchange over a shared 1200 bps link in one hour is
much less than what can be done in Fidonet on 28.8k dedicated connection.

Of course there are other network deficiencies in our area.....bulletin traffic
has dropped to 3-4 a day now. Except for when I swap the forwarding file with
the modem forwarding version...and call the one system that has a modem and
exchange the backlog of bulletin traffic that way. Its only a 2400 bps
modem....

It only get's me PNW bulletins....I'd like to find another MODEM FWD site to source the other bulletins.

Yes, I would very much like to see this packet work using amateur radio methods, and the users whine that this is the way it should be....of course in the same breath they whine about the lack of messages. And, I'm just a BBS, if nobody can set up a working node link to the other BBSs...there isn't a whole lot I can do except complain along with them, or look for other routes around the problem.

But, I'm digressing again.....
--
"Just a Crazy Engineer with an Amiga and an HP48sx"   - The Dreamer
Email: dreamer@lhaven.uumh.ab.ca or "Lawrence Chen" @ 1:134/3002
PHONE: +1 403 526 6019   FAX: +1 403 529 5102   CIS: 74200,2431
Praxis Society K12 BBS: +1 403 529 1610 Lunatic Haven: +1 403 526 6957
CYSNET Packet BBS: +1 403 526 4304 LHaven Dialup: +1 403 526 5035
Packet: VE6LKC @ VE6PAQ.AB.CAN.NOAM

119. Re: ARRL 9th Proceedings

From: ssampson@sabea-oc.af.mil (Steve Sampson)
Date: Wed, 15 Jun 1994 07:29:07 -0500 (CDT)
To: netsig@tcet.unt.edu
Message-ID: <9406151229.AA01249@sabea-oc.af.mil>
Rendered body type: text/plain

> The PACSAT protocols were first published in the 9th ARRL CNC
> Proceedings (1990). Not sure if there have been any updates.

This is out of print. It's not very useful to get a book reference which people can't acquire. Probably the best thing people can do when they wish to advocate a protocol is to make sure it is available for reading. Maybe an ftp site, or a book in print, or a trade magazine that librarys typically carry.

--
Steve

120. Re: FW: Sophisticated/Primer Style Routing

From: David Bashaw <dbashaw@SynOptics.COM>
Date: Wed, 15 Jun 94 08:05:55 PDT
To: netsig@tcet.unt.edu
Message-ID: <9406151505.AA05845@rimbaud>
Rendered body type: text/plain

K8LT wrote:
>The second case you mention (large networks) is also realistic. At some
>point, the administrative effort of keeping everything in sync
>becomes painful. Some backbone routing tables around here include on the
>order of 50 subnets and getting changes made smoothly is non-trivial.
>
>Plus, I really hate to expend manual effort on any task I can get the
>computer to do for me :-)

I'm not sure why people are concerned about the size of networks when it comes to routing, but then I come from a traditional lan background where ip routing consists of a routing table that mostly contains routes determined by what the router sees and some defaults. If a packet has no table entry it follows the default. In ip routing the table consists mainly of destination network addresses and nothing about individual host addresses, which helps hide info and keep routing tables small and routing decisions efficient. What am I missing about amateur ip that makes this point such a hot topic?

Any pointers appreciated!

Dave Bashaw, wa6qwl
dbashaw@synoptics.com

121. Re: ARRL 9th Proceedings

From: Greg Jones <gjones@tenet.edu>
Date: Wed, 15 Jun 1994 10:33:16 -0500 (CDT)
To: netsig@tcet.unt.edu
Message-ID: <199406151533.KAA05673@Kay-Abernathy.tenet.edu>
Rendered body type: text/plain

According to TAPR Network Special Interest Group:
> From: ssampson@sabea-oc.af.mil (Steve Sampson)

> Subject: Re: ARRL 9th Proceedings
> To: netsig@tcet.unt.edu
> Date: Wed, 15 Jun 1994 07:29:07 -0500 (CDT)
>
>
> > The PACSAT protocols were first published in the 9th ARRL CNC
> > Proceedings (1990). Not sure if there have been any updates.
>
> This is out of print. It's not very useful to get a book reference which
> people can't acquire. Probably the best thing people can do when they
> wish to advocate a protocol is to make sure it is available for reading.
> Maybe an ftp site, or a book in print, or a trade magazine that librarys
> typically carry.
>

All the ARRL Networking Proceedings are available from the ARRL. They are not out of print. Although the 9th was an earlier paper and did not have a lot of detail. I would think that some of the stuff that Harold and Jeff published in the small satellite conference might be better, but like I said I don't have any references handy. Would only require a few hours at the library to do the necessary research - but I have other fish to fry currently at school.

I'll ask Harold and see what he suggests, but I think you will find that it costs money to keep up to date on these or try to convience your library to get the ARRL and AMSAT proceedings. Then you can include the UoSAT/UK AMSAT proceedings, and a few others in order to keep abreast.

I discovered to my horror year before last, if that you depened on Internet as your only informational source then your world is very skewed since most things are still being published. Boy did my profs hit me hard :-)

Cheers - Greg

122. Re: ARRL 9th Proceedings

From: ssampson@sabea-oc.af.mil (Steve Sampson)
Date: Wed, 15 Jun 1994 12:08:22 -0500 (CDT)
To: netsig@tcet.unt.edu
Message-ID: <9406151708.AA05897@sabea-oc.af.mil>
Rendered body type: text/plain

Greg Jones <gjones@tenet.edu> writes:
> All the ARRL Networking Proceedings are available from the ARRL. They are
> not out of print.

FYI - I checked earlier in the year and the said it was out of print. According to Ms. Zoe who I called today, it is still out of print and no plans are made to ever reprint any of the volumes.

> . . .if that you depened on Internet as your only informational source
> then your world is very skewed. . .

I didn't mean to infer that I don't go to the library. Just that there are few places to keep up to date on packet radio, which is one reason why I joined this SIG. I'm *hoping* that there are places on the internet to keep up with computer networking ideas, as the printed matter is very academic in nature, rather than implementation specific.

Steve

123. DAMA Protocol

From: ssampson@sabea-oc.af.mil (Steve Sampson)
Date: Wed, 15 Jun 1994 12:51:41 -0500 (CDT)
To: netsig@tcet.unt.edu
Message-ID: <9406151751.AA06615@sabea-oc.af.mil>
Rendered body type: text/plain

I was just looking through the ARRL 8th Computer Networking Conference (and I don't know if it is out of print also) yesterday, and an interesting proposal was the article on page 203 called "DAMA - A New Method of Handling Packets?" which merely modifies the current AX.25. DAMA is Demand Assigned Multiple Access.

Basically Herr Schmidt (DK4EG) does not favor the idea of full-duplex digi-peaters because of both cost and "the system will occupy two frequencies but will only realize the maximum throughput of one." His article goes on to outline the changes needed to make the half-duplex system work, and seems very minor.

Establish Connect: Any connection request by a node to an user is added to a
polling table (this polling is not the same as the P/F polling bits) and a
standard SABM is sent. No UA Acknowlegement will delete the the call from the
table. An user to a node sends a SABM (collisions are possible here) and is
added to the polling table. The node sends a UA and the user sends RR#0 which
completes the connection.

Idle: The node polls each user with an RR#. Users with no work will reply with
that RR# and will be progressively backed off based on total channel loading.
If an user doesn't respond in a set time it is bypassed on this pass and will
not be revisited until the next pass. If the user has info it will be processed.

Not to rewrite the whole article, but it seems to offer a protocol that is
easy to implement (small changes to user TNC and Node code) and greatly lowers
the impact of hidden transmitters.
--
Steve

124. Re: FW: Sophisticated/Primer Style Routing

From: bruce@pixar.com (Bruce Perens)
Date: Wed, 15 Jun 94 11:02 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <m0qDzIU-0005PeC@mongo.pixar.com>
Rendered body type: text/plain

Dave Bashaw WA6QWL Writes:
> I'm not sure why people are concerned about the size of networks
> when it comes to routing... What am I missing about amateur ip
> that makes this point such a hot topic?

The LAN that you are familliar with is fully connected (every system
can talk to every other system on the LAN without a route, you only need
one to get outside of the LAN) and it uses a more reliable data transport
than radio.

The LAN we're using for Amateur Radio packet communications is not fully
connected (so routes are more important) and is dynamicaly changing in
the reliability between any two points. Thus, we have to manage much
greater topological complexity, and we have to do it dynamicaly as
conditions change.

The best way to deal with this seems to be a partially static, partially
dynamic organization. Groups of stations are staticaly organized into
a hierarchical structure of subnets (the Northern California subnet
contains the San Francisco subnet and the Sacramento subnet, for instance)
and then stations designated as "routers" within these subnets (presumably
because they have enough memory to contain a rather large routing table)
try to automaticaly discover paths to other subnets as propogation
conditions change.

This is a "big deal". In theory it's possible, but nobody's made it work
very well so far.

        Bruce Perens AB6YM

125. Re: Serious Talk

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Wed, 15 Jun 1994 12:26:09 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9406151218.B17388-0100000@kazak>
Rendered body type: text/plain

>
> > From: Klarsen <klarsen@acca.nmsu.edu>
> > Subject: Serious Talk
>
> > > 2. Talk up the idea of having 2 tnc's and 2 radios and 2
> > antenna's at EVERY site as soon as possible. This step alone can make a
> > 1200 baud link seem like a new system with amazing speed! Of course the 2
> > radios are on different bands.
>
> I think you need to put this in context : for example, two-frequency
> backbone sites may be reasonable, since the structure is a string of
> stations. But the same strategy applied to user sites may not help much,
> since if directional aerials are used to build a mesh, you'll require
> a level of reliability of all the stations that is barely realizable
> at a bbs-level system.

        My meaning in 2. is for a network. It is best if beams are used

and thus reduce access to the 2 radios by users. If you need a user node
at the site then you need another radio and tnc and an octipus for
connecting 3 tnc's together and another band to put this on...

>
> I assume you don't mean 2-frequency user stations with non-directional
> aerials - I can't see any advantage to that.
>
> -adrian
>
        Yes Adrian, non-directional antennas are for user nodes.
But in some cases a dual band 2m/70cm antenna might make sense.

-karl k5di

126. Re: BER v Retries

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Wed, 15 Jun 1994 12:34:10 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9406151206.C17388-0100000@kazak>
Rendered body type: text/plain

> From: glg@balrog.k8lt.ampr.org (Gary L. Grebus)
> Subject: BER v Retries
> To: netsig@tcet.unt.edu
> Date: Tue, 14 Jun 94 23:53 EDT

        lots omitted***

> In general, what's needed more than new protocols is for people to put
> some code where there mouth is. Prototype some of the existing ideas
> (or new ones), collect a group of testers, test, and measure the
> results.
>
>
>   /gary
>   K8LT
>
        YES! Said again and again lets get busy and play with what we now
have. There is still a lot to learn about TheNet and x1j nodes and ROSE
and Texnet. Who will save VERIFIED data so a new node sysop can get the
good help he needs?

-karl k5di

127. Re: DAMA Protocol

From: bruce@pixar.com (Bruce Perens)
Date: Wed, 15 Jun 94 14:12 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <m0qE2G6-0006avC@mongo.pixar.com>
Rendered body type: text/plain

Didn't Karn do something similar called "MACA"?

        Bruce

128. Re: ARRL 9th Proceedings

From: Tim Baggett <wbaggett@NMSU.edu>
Date: Wed, 15 Jun 1994 15:23:13 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.87.9406151513.E21142-0100000@gauss>
Rendered body type: text/plain

On Wed, 15 Jun 1994, TAPR Network Special Interest Group wrote:

> From: ssampson@sabea-oc.af.mil (Steve Sampson)
>
> FYI - I checked earlier in the year and the said it was out of print. According
> to Ms. Zoe who I called today, it is still out of print and no plans are made
> to ever reprint any of the volumes.
>

This is what we were told a few months ago when we ordered the entire set
of CNC proceedings. There has to be someone out there who may be able to
provide copies of certain articles for us? I've been particularly
interested in the paper describing the AX25MON software. I understand it
is in the 9th CNC proceedings and I haven't found it in our set yet. (I

dont wanna hear about the copyright stuff either - I just wanna read
someone's paper)

> I didn't mean to infer that I don't go to the library. Just that there are

Hahaha, How many libraries around the country have amateur packet radio
publications! The NMSU library has QST back until the 1910's but nothing
very recent. The NMSu radio club/NMSU telemetry center plans on donating
our CNC series to the library when we get done using them. Maybe someone
knows of a library that has the 9th CNC proceedings and also participates
in the inter-library load program? This may be a way to find get some of
the limited information on amateur packet radio.

73
Tim

****
Tim Baggett, AA5DF   Electrical Engineering Student
                                      New Mexico State University
Internet: WBAGGETT@NMSU.EDU
AMPR: AA5DF@NMSUGW.AMPR.ORG   US Snail: 1805 Rentfrow Apt #1
(When on) AA5DF.AMPR.ORG   Las Cruces, NM 88001
****

129. Re: Broadcast Protocols

From: djk@dirku.demon.co.uk (Dirk-Jan Koopman)

Date: Wed, 15 Jun 1994 22:43:50 +0200 (BST)
To: netsig@tcet.unt.edu
Message-ID: <m0qE2kR-0004gBC@dirku>
Rendered body type: text/plain

I was asked to elaborate on Broadcast Protocols by a few of you.

Let me define a broadcast protocol; it is a protocol that, with only one
multiply received packet and the minimum no of acknowledgements
(preferably none) you can accertain that it has been received by those
that need to.

What it is _not_ is IP broadcast, UI frames etc (as such, or alone).

There have been a number of proposals for broadcast protocols, in the
amateur community including the WA4DSY's, mine (in Connect International
some time before) and the only one actually in everyday use which is the
Amsat protocol. They are all predated by the work of the late G8UFQ
whose ideas (unfortunately) were never published, but were implemented
in his BBS system which was (one of?) the first multitasking BBS programs
available (certainly in the UK).

It is worthwhile perhaps, for those interested, to look at the original
papers again to see some of the design philosophies but the premier
issue is:

The number of acknowledgements should be reduced to an absolute
minimum.

This means (ideally) that there should be no (or very few)
acknowledgements. Strangely, this is very nearly possible! If you use
either what I chose to call 'infinite window' sizes and selective reject
or negative acknowledgements as used in the Amoeba group protocol, you
can achieve impressive throughputs.

In the first case the idea is that a message (ie a collection of more
than one packet) is broadcast without interruption from beginning to end
(it could easily be more than one message, but we keep it simple). After
the Tx has done it invites receiving stations for a hole list (ie those
packets which each station didn't receive) preferably in some
intelligent form (so that runs of packets aren't individually
specified). A (small) period of time goes by after no more lists are
received (from all the participating stations), a (hopefully small) set
of missing packets are then generated and re-broadcast. The process
repeats until completion. There are a few extra checks and balances that
are necessary, but that is essentially the idea.

This sort of protocol is very good for news, bulls etc. It doesn't
address things like DX spots or other single packet messages that need
to be shared amongst many. Here the negative acknowledge form of
protocol becomes useful. In essence it works like this:

A Tx sends a packet which is numbered, all stations receiving compare
the packet number with the last one they received, if it is more than
one greater (mod x, where x is the length of a queue) than the last
packet they received they send a 'negative acknowledge' telling the Tx
to send all the packets between Rx's last packet no and the packet no
just received.

If the Rx receives all the packets from Tx in sequence (careful level 1
design AND configuration would work wonders here) then NO
acknowledgements are necessary except (possibly and depending on the
time criticality of the application) some kind of Rx timeout polling.

As far as I am aware all the amateur protocols in use fall basically
(+/- assorted bells and whistles) into the first type of protocol.

Now, as an aside, some of you might not be aware that is perfectly
possible (especially in a chaotic urban area with more than one station
forwarding on a frequency) to set up a comparitively simple receive only
setup that captures bulletins just by listening to the exchanges between
BBSs. I wrote a program (some years ago, when compressed forwarding was
still just an idea in one or two people's heads) which simply listened
to a channel and tried to reconstruct the messages passed between
forwarding BBSs. It identified a message by its bid (which meant that if
you missed the SP XXXXX @ YYYYY < ZZZZZ $BBBBBBB you were stuffed) and
then followed the normal AX25 conversation constructing a message packet
by packet. Quite often packets were missed, but they were also missed by
the receiving BBS (for the same reason that I missed them - tramping by
others), so I tracked the retries and quite often would get the complete
message this way. If it didn't get the whole message, it would store the
bits it had got and then listen out for another SP etc packet with the
same bid and then attempt to get the holes.

The net result of this, with 3 BBSs forwarding to each other, I was
getting 92-100% of all the bulls forwarded without a single transmission
(by me) on a frequency that shared forwarding with a significant amount
of user access (only those with knowledge of the UK packet scene would
understand the true awfulness of 144.650!)

I tell this story to try and demonstrate that those that say radio
broadcast is _inherently_ unreliable are er.. misinformed. The empirical
evidence (ugh.. nasty horrible thing, nearly as bad as heuristics!) does
not bear their argument out.

Before I go, I should just mention that the original G8UFQ protocol also
only sent headers NOT message text to other BBSs using his protocol,
only those bulls that WERE ACTUALLY READ had their text sent around his
local network. You will not be surprised to learn that he found this to
be the single most important contribution to bandwidth saving that he
could make.....

Dirk g1tlh

130. Re: ARRL 9th Proceedings

From: Greg Jones <gjones@tenet.edu>
Date: Wed, 15 Jun 1994 20:10:15 -0500 (CDT)
To: netsig@tcet.unt.edu
Message-ID: <199406160110.UAA29131@Kay-Abernathy.tenet.edu>
Rendered body type: text/plain

According to TAPR Network Special Interest Group:
> From: ssampson@sabea-oc.af.mil (Steve Sampson)
> Subject: Re: ARRL 9th Proceedings
> To: netsig@tcet.unt.edu
> Date: Wed, 15 Jun 1994 12:08:22 -0500 (CDT)
>
>
> I didn't mean to infer that I don't go to the library. Just that there are
> few places to keep up to date on packet radio, which is one reason why I
> joined this SIG. I'm *hoping* that there are places on the internet to keep
> up with computer networking ideas, as the printed matter is very academic in
> nature, rather than implementation specific.

I didn;t mean to infer that either - sorry.

I sent Jon Bloom at the league a message, the league in the past alwasy kept
those in stock, so I will see what kind of sight Jon has on this. They had
several of the first years bound as one book at one time, it would make
senese that they should combine some other ones into one tome.

These proceedings are a real source of information and if people can't get
them -- it makes publishing in them year after year a little silly.

On the matter of the broadcast protocol, Harold says that the 9th ARRL
proceedings is probably the best. He should be joining the group shortly to
be able to discuss this issue.

Greg

131. Re: DAMA Protocol

From: Greg Jones <gjones@tenet.edu>
Date: Wed, 15 Jun 1994 20:15:30 -0500 (CDT)
To: netsig@tcet.unt.edu
Message-ID: <199406160115.UAA29238@Kay-Abernathy.tenet.edu>
Rendered body type: text/plain

According to TAPR Network Special Interest Group:
> From: ssampson@sabea-oc.af.mil (Steve Sampson)
> Subject: DAMA Protocol
> To: netsig@tcet.unt.edu
> Date: Wed, 15 Jun 1994 12:51:41 -0500 (CDT)
>
> I was just looking through the ARRL 8th Computer Networking Conference (and
> I don't know if it is out of print also) yesterday, and an interesting
> proposal was the article on page 203 called "DAMA - A New Method of Handling
> Packets?" which merely modifies the current AX.25. DAMA is Demand Assigned
> Multiple Access.
>

This scheme could be summarized as a very simple token passing system.
Something similar to that is also implemented on the UoSAT satellites.
But - it all revolves around something different than user to user connections.
That there is some controlling server/node involved. It might complicate
user to user (one to one connects), but would allow maybe more friendly use
on more congested BBS and network node channels.

greg

132. Standard Digital Radio Interface Proposal

From: Jeffrey Austen <JRA1854@tntech.edu>
Date: Wed, 15 Jun 1994 20:35:47 -0500 (CDT)
To: netsig@tcet.unt.edu
Message-ID: <01HDL1K3JOIQ95N5IJ@tntech.edu>
Rendered body type: text/plain

Here is an article which was just published in PSR. Comments?

A Proposal for a Standard Digital Radio Interface

Jeffrey Austen, k9ja
2051 Clearview Dr., Cookeville TN 38501, USA
Internet: jra1854@tntech.edu
PacketBBS: k9ja@wa4uce.#midtn.tn.usa.noam

Introduction

Just about everyone who has ever used packet radio has had to deal with
what should be a simple task: that of properly connecting radios and
terminal node controllers (TNCs) together. Unfortunately, many people
have learned that it is not very simple. Not only do the proper signal
connections need to be determined between each radio and TNC but the
correct audio levels must be set in order for the system to work well.
This problem is compounded for persons with multiple TNCs or multiple
radios. Every time a radio or TNC is changed, the system must be
readjusted for proper receive and transmit audio levels, as well as
proper delay times to accommodate the key-up time of the transmitter.
These problems are exacerbated by the existence of differing connectors
for different models of radios and TNCs. All of this can be attributed
to the fact that the interface between the equipment uses analog
signals despite the fact that packet radio is a mode of digital
communications. For operation at speeds greater than 1200 bits per
second (b/s) most radios do not even provide a connector for the
appropriate signals. Operators of digipeaters or remote sites are
burdened with the task of hauling around extra test equipment and
adjusting radios on-site instead of performing these adjustments in a
convenient location such as a laboratory or home station. Emergency
operation is difficult because it is almost impossible to properly

connect various equipment quickly in the field unless the exact configuration is known beforehand.

In this article a proposal for a digital radio (DR) interface is developed. This interface is designed to support all current packet modulation methods and speeds and any which can be reasonably anticipated for future use. It provides "plug and play" operation between any digital radio and TNC (from here onward the term TNC refers to a TNC or any other device, such as computer or packet switch, which processes the data being communicated). It can be easily incorporated into most of the current equipment and it allows the use of a single radio in multiple packet modes without changing cables or making any adjustments.

Requirements

The requirements of the interface are as follows:
- connect any DR to any TNC;
- be transparent to the data stream;
- operate over a wide range of speeds;
- operate with both synchronous and asynchronous modulation modes;
- operate in both full- and half-duplex modes as well as in transmit-only and receive-only systems;
- provide good immunity to electromagnetic interference (EMI);
- be tolerant of variations in the equipment: not require any adjustments when equipment is changed;
- operate over cable distances from zero to at least 10 meters;
- be usable for all existing digital communications modes and for all anticipated modes in the future;
- operate at all existing speeds and at all reasonable future speeds, at least up to 2 Mb/s;
- have a single standardized connector so that connection is "plug and play;"
- sense when cable is disconnected or when the DR is powered down;
- make use of existing standards, where possible; and
- allow easy migration from the current system.

Development of the Interface

In a digital communications system the digital information is communicated by representing the information as an analog signal. For the interface the simplest representation should be used for the information being sent: this is a serial bit stream. To do this, it is necessary to move the "modem" out of the TNC and into the DR. This change has a benefit of making the dual use (voice and data) of the radio easier to accomplish. A front panel switch could easily select between voice and one or more data modes; for example, a 2-m radio might be built to support voice, 1200 b/s packet and 9600 b/s packet.

Many standards have been developed for use in data communications. Some standards which are related to the needs of this interface are EIA/TIA-232, EIA/TIA-422, EIA/TIA-423, CCITT V.10, V.11, EIA/TIA-449. There appears to be no standard which provides the necessary functionality; however, some standards can be incorporated into the interface.

Examination of the information which must be communicated across the interface yields the required signals. The fundamental information which must be conveyed across this interface is receive data and transmit data. Auxiliary information is necessary to indicate where each data bit is, when the data is valid, and when the data can be sent and received. To accommodate both synchronous and asynchronous systems at varying speeds a synchronous interface is used. The receive and transmit clock signals originate at the digital radio and are independent of each other.

To send data from the DR to the TNC the following items are necessary.
- Receive Data: the data from the DR to the TNC.
- Receive Clock: a clocking signal for the receive data, originating at the DR.
- Receive Data Valid: a signal originating at the DR which indicates that the receive data signal is valid (similar to carrier detect).

To send data from the TNC to the DR the following items are necessary.
- Transmit Data: the data from the TNC to the DR.
- Transmit Clock: a clocking signal for the transmit data, originating at the DR.
- Request To Send: a signal from the TNC to the DR indicating that data transmission is requested.

- Clear To Send: a signal from the DR to the TNC indicating that data transmission may proceed.

One other signal is necessary to convey the DR status to the TNC.
- DR Ready: a signal from the DR to the TNC indicating that it is powered up and capable of reception and/or transmission of data.

The Interface Proposal

The signals listed above will be sent using a combination of EIA/TIA-422 (differential) and EIA/TIA-423 (single-ended) signal levels. The two data signals and two clock signals, because of the potentially high speed will use differential signaling, which provides for speeds of up to 10 Mb/s. These signals will use eight wires of the interface. The status signals will use single-ended signaling because high speed is not necessary. These signals will use four signal lines and two ground lines (one in each direction, per EIA/TIA-423 specifications). To insure proper operation under fault conditions (either unit is powered down or the cable is not connected)"fail safe" line receivers must be used for the four status signals (RDV, RTS, CTS, and DRR).

Much of the delay necessary at the beginning of the transmission are due to internal delays in the transmitter. This delay is made the responsibility of the DR rather than the TNC. When CTS becomes active, data can be sent immediately; after the last bit of data has been sent, RTS may become inactive. Additional delay may be added in the TNC (as is done currently).

The physical connector selected is a high-density 15-pin D-series connector. This connector is small enough to be used on mobile and portable equipment and yet it reasonably rugged, reliable and inexpensive. The male connector (plug) is used on the TNC and the female connector (socket) is used on the DR. Although the same type of connector is popular for computer displays, the opposite sex connector is used on the computer so that confusion should not occur. Cables will act as "extension cords," that is they pass all pins straight through from the connector on one end to the other end. The shell of the connector must be used for the shield connection if a shield exists on the cable; if no shield exists the shells must be connected by a wire in the cable. All DRs and TNCs must have metallic connector shells so that shielded cables can be used effectively.

Alternative Interconnections

Although the interface is specifically designed to connect a DR to a TNC, it can be used to connect two DRs or two TNCs together or it can be used in a transmit-only or receive-only system. To connect two DRs together there needs to be a adapter which contains a FIFO large enough to accommodate the largest packet at the maximum speed differential between the systems. To connect two TNCs together there needs to be an adapter which generates appropriate clock signals. The receive and transmit signals are independent of each other so they can be running at different speed or be going to different DRs; use in a transmit- or receive-only system is also possible (a protocol other than AX.25 will be necessary in this case).

Incorporation Into New and Existing Equipment

This interface can be incorporated into new radio designs by including the "modem" with the radio and providing a method for switching modes (e.g., voice, 1200 b/s data, 9600 b/s data). Most TNC designs can be updated quite easily to incorporate the interface without eliminating any current features.

Most existing systems can be easily modified to use the new standard. It appears that the PackeTen, DataEngine, PI, PI2 and PackeTwin cards and Kantronics DataEngine modems require very little modification as the appropriate signals are available to easily add the interface; the only significant change is that with the new interface the modem is physically housed with the DR, not the TNC. In general, any modem which performs clock recovery can be easily modified for use with this interface. Any TNC which provides the "modem disconnect header" can have the interface added to it by using that connector. A smooth transition from the current system to using the new interface can be made by providing adapter kits for common modems and TNCs so that current equipment will not be obsoleted.

Summary

The interface proposal presented here will solve the problem of connecting digital radios and terminal node controller or computer equipment together. It provides a simple, inexpensive, versatile, and easy-to-use solution. It is applicable to all current packet radio systems, as well a other digital systems and it does not inhibit future improvements to packet radio systems, either in the modulation and coding techniques or in the protocols. While the exact specifications remain to be finished and tested through implementation, much existing technology is being used and no problems are anticipated. The author welcomes suggestions for the improvement of this interface and is interested in hearing from a few persons who are willing to design and test interfaces for various modems and TNCs.

133. Re: ARRL 9th Proceedings

From: hprice@bektek.com (Harold Price)
Date: Thu, 16 Jun 1994 10:42:20 -0400
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <199406161443.KAA05744@telerama.lm.com>
Rendered body type: text/plain

>Tim Baggett sez:
> I've been particularly
>interested in the paper describing the AX25MON software. I understand it
>is in the 9th CNC proceedings and I haven't found it in our set yet.

This paper you refer to, "Performance Monitoring, or, I wanna Fix it, Is it Broke?" by WB6YMH and NK6K is in the 6th conference proceedings. The text of the paper (without the graphs) is in paper.doc in the release .zip, called monax25.zip. It may still be on CI$ in hamnet dl9 as monax.zip.

Use archie to find it on the internet. It is at least at ucsd.edu in /hamradio/packet/monax25/monax25.zip

-NK6K

134. Re: Broadcast Protocols

From: hprice@bektek.com (Harold Price)
Date: Thu, 16 Jun 1994 10:42:23 -0400
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <199406161443.KAA05748@telerama.lm.com>
Rendered body type: text/plain

>From: djk@dirku.demon.co.uk (Dirk-Jan Koopman)
>Subject: Re: Broadcast Protocols
>To: netsig@tcet.unt.edu
>Date: Wed, 15 Jun 1994 22:43:50 +0200 (BST)
>
>I was asked to elaborate on Broadcast Protocols by a few of you.

Many good points are made in this message. We had a slightly differnet set of requirements for the satellite protocols. I'll discuss these below.
>
>Let me define a broadcast protocol; it is a protocol that, with only one
>multiply received packet and the minimum no of acknowledgements
>(preferably none) you can accertain that it has been received by those
>that need to.

We used a different definition for the UoSAT/Microsat Protocols. It was: anyone should be able to make use of a received frame, even if they didn't originate the transaction. Since the spacecraft are in general downlink limited, we wanted to make the best use possible of that resource. We therefore:

Uniquely number each file.
Place a small header in each frame, giving file number and byte offset within that number.

With these items, you can receive any packet and tell where it goes. The last packet of the file has a special bit set in the packet header. You can then tell when you have an entire file.

We also wanted to pass binary files, where we can't rely on a human to say "that's bogus". We therefore add a file checksum.

We also wanted the file to be useful, even if you didn't ask for it, can't tell from the contents what it is. We therefore prepend a special header to the file giving extended information, types, compression info, dates, original file name, source and destination, etc.

>The number of acknowledgements should be reduced to an absolute
>minimum.

This was the 2nd strong advantage of the broadcast protocol, reducing uplink
contention by eliminating acks.
>
>This means (ideally) that there should be no (or very few)
>acknowledgements. Strangely, this is very nearly possible! If you use
>either what I chose to call 'infinite window' sizes and selective reject
>or negative acknowledgements as used in the Amoeba group protocol, you
>can achieve impressive throughputs.

Many stations, including the station at Surrey, almost never request a file,
but end up with complete copies of most files (hundreds per week). This is
because the downlink channel is collision free, and the probability is high
that if a packet was sent, you hear it. This would work less well on a
simplex channel with hidden terminals.

>Now, as an aside, some of you might not be aware that is perfectly
>possible (especially in a chaotic urban area with more than one station
>forwarding on a frequency) to set up a comparitively simple receive only
>setup that captures bulletins just by listening to the exchanges between
>BBSs.

True, but not "reliable", where reliable means that you are certain that you
received an entire message, and that the message is correct. This method is
certainly not dependable for binary files, and messages where there is not
agreed end convention. For example, frame #1:
  Free Pizza and Beer, 4:00 today, 721 Pacific Coast Highway
Frame #2
  El Segundo. Be There.

If you assumed it was 721 Pacific Coast Highway, Redondo Beach, you will be
many miles away from free beer.

The snoop method can get you entire messages, but you can't be sure that
you've got it. That's why we chose to encapsulate the message(file) with
enough additional information that you know when you have the right stuff.

Harold

135. Re: Standard Digital Radio Interface Proposal

From: agodwin@acorn.co.uk (Adrian Godwin)
Date: Thu, 16 Jun 94 15:43:29 +0100
To: netsig@tcet.unt.edu
Message-ID: <9406161443.AA26702@snark.acorn.co.uk>
Rendered body type: text/plain

>
> A Proposal for a Standard Digital Radio Interface
>
> (stuff deleted)
>
> Requirements
>
> The requirements of the interface are as follows:
> - connect any DR to any TNC;
> - be transparent to the data stream;
> - operate over a wide range of speeds;
> - operate with both synchronous and asynchronous modulation modes;
> - operate in both full- and half-duplex modes as well as in transmit-
>   only and receive-only systems;
> - provide good immunity to electromagnetic interference (EMI);
> - be tolerant of variations in the equipment: not require any
>   adjustments when equipment is changed;
> - operate over cable distances from zero to at least 10 meters;
> - be usable for all existing digital communications modes and for all
>   anticipated modes in the future;
> - operate at all existing speeds and at all reasonable future speeds,
>   at least up to 2 Mb/s;
> - have a single standardized connector so that connection is "plug and
>   play;"
> - sense when cable is disconnected or when the DR is powered down;
> - make use of existing standards, where possible; and
> - allow easy migration from the current system.
>

Seems a good start, and the presented solution addresses it well. However,
the suggestion is extremely similar to that provided by a synchronous
half-duplex mode (except for the differental-mode signals, which are
welcome). I believe suggestions made for clock source etc. to be correct,
unlike the RUH modem which requires the TNC to source a clock.
The clock edge on which data is valid (and the timing) must be specified!

However, modem interfaces have had a problem in recent years - they
don't allow for an intelligent interface. The result is the Hayes and
V25.bis protocols, which suffer severely from being in-band to the
communications channel.
The disadvantages of this are :

  - can't control the modem/radio without interrupting the data stream
  - the controller in the radio may be pretty dumb, yet have to talk
    at the data rate used by the comms channel
  - changeover from data to control requires extra control lines
    or (worse) in-band escape sequences.

In order to avoid this problem, I'd suggest adding to the spec an optional
control interface and accompanying protocol. Obvious uses for this are
channel change, carrier level measurement, power control and controlling
a CW ident.
I think it has to be optional to allow for present radio/modem designs,
but the implementation used when no interface exists should be
specified - perhaps looped back if a TXD/RXD pair is used, or shorted
to ground if an IIC-like bus is used. Both the TNC and the radio should
operate in a reasonable manner if the other device doesn't implement
the control interface.

A clock-and-data interface is attractive for use with small microcontrollers
as might typically be used in an intelligent radio-modem, since this
can simplify the software implementing a software USART. IIC is a possibility,
but the electrical interface is less robust than the rest of the spce
and there are copyright constraints on the standard (must use a Philips-
licensed component to implement part of the system).

It might be useful to ensure that the control protocol can be implemented
using 'spare' parts of typical high-speed comms controllers - bit-banging
I/O lines, SPI ports etc.

>
> The physical connector selected is a high-density 15-pin D-series
> connector. This connector is small enough to be used on mobile and
> portable equipment and yet it reasonably rugged, reliable and
> inexpensive. The male connector (plug) is used on the TNC and the
> female connector (socket) is used on the DR. Although the same type of

I admit to a prejudice against these connectors. Because of their high
density, they tend to use formed pins rather than turned pins - I find
the former less robust and inclined to bend. In addition, PCB-mount
male connectors seem to be much less available than PCB-mount female
connectors. This may be because many vendors only sell the parts
required for PCs (female PCB connectors and male cable connectors),
though there seems to be less of a problem getting cable-mount females.

> equipment together. It provides a simple, inexpensive, versatile, and
> easy-to-use solution. It is applicable to all current packet radio
> systems, as well a other digital systems and it does not inhibit future
> improvements to packet radio systems, either in the modulation and
> coding techniques or in the protocols. While the exact specifications
> remain to be finished and tested through implementation, much existing
> technology is being used and no problems are anticipated. The author
> welcomes suggestions for the improvement of this interface and is
> interested in hearing from a few persons who are willing to design and
> test interfaces for various modems and TNCs.
>

I'd certainly benefit from a standard interface and would be happy to
work on it in my copious spare time. I think you need to present a complete,
costed design - I think the manufacturers of TNCs and modems might argue
with you about how inexpensive this interface is when compared to
a Molex header and a few TTL signals. But it's still the right thing to
aim for!

-adrian

136. Re: ARRL 9th Proceedings

From: agodwin@acorn.co.uk (Adrian Godwin)
Date: Thu, 16 Jun 94 15:44:36 +0100
To: netsig@tcet.unt.edu
Message-ID: <9406161444.AA26710@snark.acorn.co.uk>
Rendered body type: text/plain

> From: Greg Jones <gjones@tenet.edu>
> Subject: Re: ARRL 9th Proceedings
>
> I sent Jon Bloom at the league a message, the league in the past alwasy kept
> those in stock, so I will see what kind of sight Jon has on this. They had
> several of the first years bound as one book at one time, it would make
> senese that they should combine some other ones into one tome.
>

If the ARRL don't feel it's worth the cost of reprinting them, perhaps
they could make them available on their email / ftp server ? Many of
the articles appear to have been created in electronic form, and may
still be available that way (even if the ARRL got them as paper).

> These proceedings are a real source of information and if people can't get
> them -- it makes publishing in them year after year a little silly.
>

Agreed.

-adrian

137. Re: Standard Digital Radio Interface Proposal

From: Douglas Fajardo <dfajardo@netcom.com>
Date: Thu, 16 Jun 1994 12:23:30 -0700 (PDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9406161147.A2080-0100000@netcom3>
Rendered body type: text/plain

<summary: Jeffrey Austen proposed a standard for connecting radios to TNC's>
    Some comments:
        (1) Generally well thought out, and a very worthy idea which
should be developed ASAP.

        (2) The proposal left out the actual signal levels to be used, or
did you want to include the RS-232 and RS-422 signal levels by reference?
IMHO, it would be 'cleaner' to copy those specifications into the standard
rather than reference them, to avoid confusion (ie:RTS and CTS don't mean
the same thing between the two standards).

        (3) One comment - in this modern day of computer - controlled
radios, there should be some provision for the TNC to control the
operating modes, frequencies, etc of the DR.

        I'd like to suggest that a control line from the TNC to the DR be
added, which would serve to switch the DR from an 'online' status to an
'offline-command' mode. When in 'offline-command' mode, the transmit and
receive data lines would allow control instructions and responses to flow
between the DR's processor and the TNC. The capability would be optional.
To signify that the option is not in use, non-intelligent DR's could
simply echo the incoming command stream (from the 'transmit data line') to
the outgoing 'receive data line'. We would have to define a protocol for
the control data, so that the same software can control at least the basic
features of any radio (frequency and mode select at a minimum). I suggest
that a look at the MIDI interface (used by the music industry) might give
some ideas as to how the control protocol might be designed.

138. Re: ARRL 9th Proceedings

From: Stu Mitchell <stu@ash.lab.r1.fws.gov>
Date: Thu, 16 Jun 1994 21:01:49 +0000
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9406162043.A1195-0100000@ash.lab.r1.fws.gov>
Rendered body type: text/plain

On Wed, 15 Jun 1994, TAPR Network Special Interest Group wrote:

> This is what we were told a few months ago when we ordered the entire set
> of CNC proceedings. There has to be someone out there who may be able to
> provide copies of certain articles for us? I've been particularly
> interested in the paper describing the AX25MON software. I understand it
> is in the 9th CNC proceedings and I haven't found it in our set yet. (I
> dont wanna hear about the copyright stuff either - I just wanna read

> someone's paper)

I think it's included in monax25.zip. Check out:

ftp.ucsd.edu:hamradio/packet/monax25/monax25.zip

I've used the package here to quantify the packet traffic. It's
interesting to see what really works and what doesn't!

Stu Mitchell stu@lab.r1.fws.gov
USFWS Forensic Lab mitchellstu@fws.gov
Ashland, Oregon wd4eck@w7oek
*** These are my opinions, not the Government's ***

139. ARRL 9th CNC

From: Greg Jones <gjones@tenet.edu>
Date: Thu, 16 Jun 1994 21:24:00 -0500 (CDT)
To: netsig@tcet.unt.edu (NETSIG mailing)
Message-ID: <199406170224.VAA28644@Kay-Abernathy.tenet.edu>
Rendered body type: text/plain

>From Jon Bloom:

Out of print. However, there should be no reason why we can't reprint some
of the better papers from the 9th in this year's book if that is something
worth doing.

-- Jon

I would suggest folks send mail to jon at jbloom@arrl.org if they have
further comments on the CNC printing.

Greg

140. Re: ARRL 9th Proceedings

From: Greg Jones <gjones@tenet.edu>
Date: Thu, 16 Jun 1994 22:25:58 -0500 (CDT)
To: netsig@tcet.unt.edu
Message-ID: <199406170325.WAA01567@Kay-Abernathy.tenet.edu>
Rendered body type: text/plain

According to TAPR Network Special Interest Group:
> Use archie to find it on the internet. It is at least at ucsd.edu in
> /hamradio/packet/monax25/monax25.zip
>

TAPR also has the disk as part of its Software Library.

Greg

141. Re: Broadcast Protocols

From: djk@dirku.demon.co.uk (Dirk-Jan Koopman)
Date: Fri, 17 Jun 1994 11:34:55 +0200 (BST)
To: netsig@tcet.unt.edu
Message-ID: <m0qEbGB-0004gCC@dirku>
Rendered body type: text/plain

Can I just confirm most of what that Harold says, I apologise for
simplifying the PACSAT protocol down beyond that which he recognised!

Harold does amplify (and hopefully makes the advantages a lot clearer)
his type of broadcast protocol (what I choose to call infinite
windowing). He and I have crossed swords (or might have been Jeff, I
can't remember, it's a long while ago now) about the necessity for
binary data and the actual format used in his protocol - but these are
differences of philosophy and application, not principle; in any case
these arguments are now probably irrelevant.

There is nothing at all to prevent the PACSAT protocol (or something
like it) being used terrestially. It is my contention that this would be
a damn fine idea for all applications that fit ie BBS bulletin traffic
etc.

I would appreciate comments on the second sort of broadcast protocol, ie
the 'negative acknowledge' type. Interestingly, as an aside, the Mobitex

commercial protocol uses negative acknowledge as its level 3 (and a
half) acknowledgement system - although it isn't a broadcast protocol as
such. The protocol is predicated on the idea that if you don't hear to
the contrary, it has be delivered.

Finally whilst Harold is correct in saying that the AX25 monitor that I
wrote could not _guarantee_ that what I had received was correct, once
the system was debugged, it did not produce corrupted bulls (I checked
with the originals!). It worked perfectly well with binary or ascii
(although there wasn't much binary about). I think you must realise that
such a system will only work where you can _guarantee_ that a message,
when sent to one BBS, will be exactly the same when sent to another from
the SAME BBS - both in content AND in packet format. To try and make
that clearer, I would monitor only ONE BBS's forwarding, if the message
did not change between forwards then the no and size of the ax25 packets
don't change either (on one channel), if you analyse all the frames
going back and forth AND you have decent signals then it is extremely
difficult to miss a section of 8 packets which what would be required to
cause received message corruption.

Dirk

142. Re: ARRL 9th CNC

From: ssampson@sabea-oc.af.mil (Steve Sampson)
Date: Fri, 17 Jun 1994 08:39:04 -0500 (CDT)
To: netsig@tcet.unt.edu
Message-ID: <9406171339.AA02345@sabea-oc.af.mil>
Rendered body type: text/plain

> >From Jon Bloom:
>
>
> Out of print.
>
> -- Jon
> ----------
>
> I would suggest folks send mail to jon at jbloom@arrl.org if they have
> further comments on the CNC printing.
>
> Greg
>

The ARRL has really dropped the ball in packet radio. It seems
that the management isn't interested in technology anymore. Maybe someone
should buy the series and print them again. It would also probably be a good
idea to have the future conferences printed elsewhere. Maybe TAPR?

--
Steve

143. Re: ARRL 9th CNC

From: hprice@bektek.com (Harold Price)
Date: Fri, 17 Jun 1994 10:25:25 -0400
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Cc: jbloom@arrl.org, j.w.ward@ee.surrey.ac.uk
Message-ID: <199406171426.KAA07595@telerama.lm.com>
Rendered body type: text/plain

>From: Greg Jones <gjones@tenet.edu>
>Subject: ARRL 9th CNC
>To: netsig@tcet.unt.edu (NETSIG mailing)
>Date: Thu, 16 Jun 1994 21:24:00 -0500 (CDT)
>
>>From Jon Bloom:
>
>
>Out of print. However, there should be no reason why we can't reprint some
>of the better papers from the 9th in this year's book if that is something
>worth doing.
>

Hmm... In the case of protocol specifications, you should first check with
the authors to see if the original papers are still relevant. In the case
of the pacsat protocol specs, the portions on why we did what we did are
still valid, but there have been protocol changes (fixes to the doc, and in
the case of the broadcast protocol, the new directory broadcast features).
It would need an update.

We're really at the crossroads of publishing as profit center and a protocol spec archive again. We need some agreement with the ARRL that the text of papers can be placed in some online archive somewhere after the passage of a reasonable amount of time. I've still got the machine readable copies, of course. The paper version serves a purpose, especially in carrying the information to the fringes past the net, but as an archive it loses its purpose once it is out of print and unavailable. It costs real money to hold these conferences and print the books, and the publisher must have some ability to recoup its costs.

Harold

144. Re: ARRL 9th CNC

From: agodwin@acorn.co.uk (Adrian Godwin)
Date: Fri, 17 Jun 94 16:52:52 +0100
To: netsig@tcet.unt.edu
Message-ID: <9406171552.AA27895@snark.acorn.co.uk>
Rendered body type: text/plain

>
> The ARRL has really dropped the ball in packet radio. It seems
> that the management isn't interested in technology anymore. Maybe someone
> should buy the series and print them again. It would also probably be a good
> idea to have the future conferences printed elsewhere. Maybe TAPR?
>
> --
> Steve

I don't know about the ARRL's future plans, but I can understand their reluctance to pay for reprints when they're going to sit on the shelf for a long time to come. Do you really want to pay the price of academic conference papers?

Jon tells me that only the 9th is out of print, and that the ARRL only has the right to reprint the proceedings - they don't have pernission from the authors to make the papers available elsewhere (though there's no reason to assume that such permission won't be forthcoming).

Since I see little point in deliberately taking revenue from the ARRL (even though there's little revenue to take) I suggest the following :

Contact the authors of all the papers to obtain permission for electronic storage and free retrieval of their work. The authors of the papers in the 9th proceedings should be made a priority.

Obtain electronic copies where available - from the authors, from the ARRL, from existing partial archives. Create electronic versions where necessary - by retyping, generating Postscript figures, even scanning hand-drawn figures. There's a fair bit of work involved, but the total is still relatively small if a few people are willing to help. We're not talking about the back issues of QST here !

Make the electronic copies available on the ARRL fileserver (assuming they're willing) or elsewhere as and when the paper copies are exhausted (so initially, only the 9th conference will be completely available this way).

Consider the future of the conference : if the ARRL is still willing to administer it, handle those papers the same way. If not, look for another volunteer but ensure there's a suitable archive.

-adrian

145. Re: Broadcast Protocols

From: hprice@bektek.com (Harold Price)
Date: Fri, 17 Jun 1994 12:03:38 -0400
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <199406171605.MAA09016@telerama.lm.com>
Rendered body type: text/plain

>From: djk@dirku.demon.co.uk (Dirk-Jan Koopman)

>Can I just confirm most of what that Harold says, I apologise for
>simplifying the PACSAT protocol down beyond that which he recognised!

As you say, we're looking at two ends of the same elephant.

>There is nothing at all to prevent the PACSAT protocol (or something
>like it) being used terrestially. It is my contention that this would be

>a damn fine idea for all applications that fit ie BBS bulletin traffic
>etc.

Agreed. It can work for any file that more than one station in the coverage areas needs. Even if only one station needs the file, the "infinite window" provision results in more efficient use of the channel, if the file server is on a different frequency that the client (and therefore doesn't need to worry about the much higher packet losses caused by contention access and hidden terminals).

>[Speaking of the negative ack system] I think you must realise that
>such a system will only work where you can _guarantee_ that a message,
>when sent to one BBS, will be exactly the same when sent to another from
>the SAME BBS - both in content AND in packet format.

Yes. In the pacsat broadcast protocol case, we wanted to allow each station to specifiy a different frame size (depending on its link margin). That's why we went with the harder-to-describe hole list protocol rather than our first though, a bit map of fixed-length packets.

>To try and make
>that clearer, I would monitor only ONE BBS's forwarding, if the message
>did not change between forwards then the no and size of the ax25 packets
>don't change either (on one channel), if you analyse all the frames
>going back and forth AND you have decent signals then it is extremely
>difficult to miss a section of 8 packets which what would be required to
>cause received message corruption.

True. You are building confidence in the correctness of the snooped file based on multiple transmissions. In the terrestrial BBS environment, where you are next to a site that is making multiple transmissions of the same file, this is a good idea. We wanted to ensure that you could know, with a single reception of a file, if you had it all.

Your scheme makes the best of what you have available, meaning adding value by capturing data from the stream, without modifying that stream. Since we had a epoch change to take advantage of (the launch of several new satellites), we could make a change to the way of doing business, add take advantage of the extra information we could add to the stream.

I did not mean to imply that your method doesn't work. In fact, I used your scheme on a more limited scale in MONAX25 to determine channel efficiency by determining if a frame was a retransmission.

Regards
Harold

146. Re: ARRL 9th CNC

From: hprice@bektek.com (Harold Price)
Date: Fri, 17 Jun 1994 12:03:51 -0400
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <199406171605.MAA09028@telerama.lm.com>
Rendered body type: text/plain

>From: ssampson@sabea-oc.af.mil (Steve Sampson)
>Subject: Re: ARRL 9th CNC
>To: netsig@tcet.unt.edu
>Date: Fri, 17 Jun 1994 08:39:04 -0500 (CDT)
>
>> >From Jon Bloom:
>>
>>
>> Out of print.
>>
>> -- Jon
>> ----------
>>
>> I would suggest folks send mail to jon at jbloom@arrl.org if they have
>> further comments on the CNC printing.
>>
>> Greg
>>
>
>The ARRL has really dropped the ball in packet radio. It seems
>that the management isn't interested in technology anymore. Maybe someone
>should buy the series and print them again. It would also probably be a good
>idea to have the future conferences printed elsewhere. Maybe TAPR?
>
First, compute the cost of printing a 259 page book, both in the large

quantities required (and warehousing the extra), then in printing a small number on demand over 15 years. This isn't a lack-of-interest problem, it is a cost problem.

Maybe what TAPR wants to do is get the reprint rights. If you want a reprint of a particular article, the TAPR office runs it off, charges you cost plus, and kicks back some to the TAPR kitty and some to the ARRL. I'll bet, especially in the case of out-of-print editions, the ARRL wouldn't even want a kickback, just the usual credit byline.

Harold

147. Re: ARRL 9th CNC

From: Greg Jones <gjones@tenet.edu>
Date: Fri, 17 Jun 1994 11:06:10 -0500 (CDT)
To: netsig@tcet.unt.edu
Message-ID: <199406171606.LAA28391@Kay-Abernathy.tenet.edu>
Rendered body type: text/plain

> From: ssampson@sabea-oc.af.mil (Steve Sampson)
> Subject: Re: ARRL 9th CNC
> Date: Fri, 17 Jun 1994 08:39:04 -0500 (CDT)
>
> The ARRL has really dropped the ball in packet radio. It seems
> that the management isn't interested in technology anymore. Maybe someone
> should buy the series and print them again. It would also probably be a good
> idea to have the future conferences printed elsewhere. Maybe TAPR?
>

I don't really think this is the case Steve. I will look further into this issue and see what TAPR can do, but if the ARRL has stopped regular printing, then it is probably due to a very low demand. Although the ARRL is a non-profit group, that means a lot of things. You have to make profit on most of the things you sale in order to cover the things you support for free.

As Harold points out - you can't afford to have money tied up on things that sit on the self for a year or more. Go broke doing that kind of thing.

I am sure the ARRL is interested in doing something that will allow the most digital oriented hams to have access to the information.

I have already talked to Jon about this and will continue a dialog with Mark Wilson. Will see what TAPR can do to help this problem.

Cheers - Greg

148. Broadcast Protocols & networks

From: ahgroff@dz12.cca.rockwell.com (A.H.Groff)
Date: Fri, 17 Jun 94 11:46:27 CDT
To: netsig@tcet.unt.edu
Message-ID: <9406171646.AA29369@dz12.cca.rockwell.com>
Rendered body type: text/plain

I have been watching some of the discussion concerning broadcast protocols and find it interesting..

  A couple of thing to consider...

1) Although not explicitly stated, it seems the the protocols disucssed are aimed at a point broadcast source, i.e. PATCSAT, BBS, and all on the listeners can hear the source directly.. what happens if a part of the bradcast audience is at the other end of a network (i.e. two node (router) hops away ,or a router between the broadcast server and the radio). Does the broadcast protocol support passing thru a network ?? Does the network know how transport the brodcast??

  I will agree that broadcasting thru a network would need to be used only in a controlled manner or it could get out of hand.. but I think there are cases where it would be benificial...

2) The broadcast protocols could be most success if the client side of the problem would fit in your typical TNC (not likely) A large portion of the potiential user base do not keep their PCs on full time to receive broadcast information even if it were broadcast... I dont intended to be negative... just that the initial benefit may not be as large as could be expected.. But if we dont get something impliemented, technology will never have a chance to develope. (TNCs with mb's of ram; low cost, low power

PC that could be dedicated to being left on full time to receive broadcasts ??)

AL, K0VM

149. Re: Standard Digital Radio Interface Proposal

From: David Bashaw <dbashaw@SynOptics.COM>
Date: Fri, 17 Jun 94 09:52:09 PDT
To: netsig@tcet.unt.edu
Message-ID: <9406171652.AA25565@rimbaud>
Rendered body type: text/plain

This sounds like great stuff. One word of advice from someone
who has been bitten by differing interpretations of the same standard
by various implementers: take the time to define the specific behavior
of each rs-232-ish signal you intend to use down to the gnats ass!!!
The following is included for reference.

>To send data from the DR to the TNC the following items are necessary.
> - Receive Data: the data from the DR to the TNC.
>- Receive Clock: a clocking signal for the receive data, originating
> at the DR.
>- Receive Data Valid: a signal originating at the DR which indicates
>   that the receive data signal is valid (similar to carrier detect).
>
>To send data from the TNC to the DR the following items are necessary.
> - Transmit Data: the data from the TNC to the DR.
> - Transmit Clock: a clocking signal for the transmit data, originating
>   at the DR.
> - Request To Send: a signal from the TNC to the DR indicating that
>   data transmission is requested.
> - Clear To Send: a signal from the DR to the TNC indicating that data
>   transmission may proceed.

I worked for Racal-Vadic in my dark past and spent many a wasted hour cranking
out custom firmware for customers who had their own interpretation of just
how this RS-232 signal called RTS or DCD was supposed to work. Everyone thinks
they know what it does.

If you intend to have commercial mfg's implement the interface then lets go
to the trouble of being as explicit as possible so they dont take the 232 spec
and do it the way they *think* spec says. This holds espically true if *special*
features unique to DR will be convayed (sp?) via any 232-type signal. This should also
cover things like signals some mfg might choose not to implement left in a state
that prevents an attached device (that expects it) from working, thus requiring
a connector, a cable, or (god forbid) a radio to be modified.

Again, this sounds like good stuff.
Dave
wa6qwl

150. Re: ARRL 9th CNC

From: Rob Mayfield <mayfield@guest.adelaide.edu.au>
Date: Sat, 18 Jun 1994 09:47:44 +0930 (CST)
To: netsig@tcet.unt.edu
Message-ID: <9406180017.AA02011@wattle.itd.adelaide.edu.au>
Rendered body type: text/plain

[stuff deleted ...]
> Maybe what TAPR wants to do is get the reprint rights. If you want a
> reprint of a particular article, the TAPR office runs it off, charges you
> cost plus, and kicks back some to the TAPR kitty and some to the ARRL. I'll
> [...]
> Harold

Maybe its about time some of this stuff was just released and made
publicly available via ftp/bbs's etc, rather than a 'low demand' and the
desire to milk it for the last cent causing it to fade into obscurity.
How many times weve seen people say 'but I wrote an article on xyz', hey
if it were more readily available, maybe some of the great ideas would
actually gain momentum ... I hate to think what a full set of CNC's cost
here in oz. (25-30$ ea ..{?})

Rob

151. TAPR SIG Archives

From: Greg Jones <gjones@tenet.edu>
Date: Sat, 18 Jun 1994 11:20:16 -0500 (CDT)
To: tapr-bb@tcet.unt.edu (TAPR-BB mailing),

netsig@tcet.unt.edu (NETSIG mailing),
bbssig@tcet.unt.edu (BBSIG mailing)
Message-ID: <199406181620.LAA23551@Kay-Abernathy.tenet.edu>
Rendered body type: text/plain

The TAPR SIG mail exchange archives are being made available via FTP access.

system: tcet.unt.edu

directory: tapr/SIG

152. Re: ARRL 9th CNC

From: srbible@cs.nps.navy.mil (Steven R. Bible)
Date: Sun, 19 Jun 94 17:10:39 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <9406200010.AA28257@taurus.cs.nps.navy.mil>
Rendered body type: text/plain

>From: Greg Jones <gjones@tenet.edu>
>Subject: ARRL 9th CNC
>To: netsig@tcet.unt.edu (NETSIG mailing)
>Date: Thu, 16 Jun 1994 21:24:00 -0500 (CDT)
>
>>From Jon Bloom:
>
>
>Out of print. However, there should be no reason why we can't reprint some
>of the better papers from the 9th in this year's book if that is something
>worth doing.
>
> -- Jon
> ----------
>
>I would suggest folks send mail to jon at jbloom@arrl.org if they have
>further comments on the CNC printing.
>
>Greg
>

Of all the CNCs, the 9th is perhaps the most popular. Paper per paper there
is more good and useful things in the 9th. I would vote to have the entire
9th CNC reprinted.

Steve

srbible@cs.nps.navy.mil
Naval Postgraduate School, Monterey, CA 93943

153. Re: Broadcast Protocols & networks

From: Adrian Godwin <agodwin@acorn.co.uk>
Date: Tue, 21 Jun 94 10:19:54 +0100
To: netsig <netsig@tcet.unt.edu>
Message-ID: <9406210919.AA00261@snark.acorn.co.uk>
Rendered body type: text/plain

[I've had trouble mailing this .. it keeps getting bounced. This
copy is sent through a different smart mailer in the hope it'll work.
Sorry if I'm repeating myself]

The proposals for broadcasting seem well suited to cut down heavy BBS
traffic, but don't appear to be general enough for less
application-specific use.

In particular, as data rates rise, we're going to be less keen to pass
all the packets received up to a high enough level to process, only
to drop them because the topic of the article isn't one that we want to
read. This causes us to tie up a good deal of the processing power of
the computer to no purpose.

At the moment, we don't filter any packets - everything received by
the TNC (or low-level drivers) is processed. I think we'll want to
make more use of hardware addressing as speeds rise, and avoid the
overhead of handling stuff not destined for us. Clearly, we'll want
to accept broadcast frames - but on ethernet, that's just low-rate
stuff like ARPs. If a large amount of the traffic on the network is
broadcast, we haven't got anywhere.

This can be resolved by having a network interface that's capable of

receiving all the packets at full network bandwidth and passing only
the ones in which higher layers have registered an interest upwards.
This is certainly feasible at 1200 baud with a TNC, but gets a bit
more tricky at Glenn's 230.4 kbps or on an ethernet!

This seems to be a problem for the IP multicast scheme, too - the
ethernet implementation is able to separate multicast 'broadcasts' from
system stufff like ARP, but still suffers from a lack of hardware
resources if several different services are subscribed to.
The general design sounds good, though - it does at least have a
scalable API. Someone suggested it wasn't suitable for our application -
can you say where it falls down ?

-adrian

154. Re: Broadcast Protocols & networks

From: djk@dirku.demon.co.uk (Dirk-Jan Koopman)
Date: Wed, 22 Jun 1994 19:45:49 +0200 (BST)
To: netsig@tcet.unt.edu
Message-ID: <m0qGXIz-0004g8C@dirku>
Rendered body type: text/plain

Adrian Godwin wrote:
> The proposals for broadcasting seem well suited to cut down heavy BBS
> traffic, but don't appear to be general enough for less
> application-specific use.

There are two sorts of broadcast protocol, it is true that the first
sort (as used by PACSAT) is well suited to BBS type traffic.

>
> In particular, as data rates rise, we're going to be less keen to pass
> all the packets received up to a high enough level to process, only
> to drop them because the topic of the article isn't one that we want to
> read. This causes us to tie up a good deal of the processing power of
> the computer to no purpose.

Which computer? (q.v.)

> At the moment, we don't filter any packets - everything received by
> the TNC (or low-level drivers) is processed. I think we'll want to
> make more use of hardware addressing as speeds rise, and avoid the
> overhead of handling stuff not destined for us. Clearly, we'll want
> to accept broadcast frames - but on ethernet, that's just low-rate
> stuff like ARPs. If a large amount of the traffic on the network is
> broadcast, we haven't got anywhere.

You are using the term 'hardware' in an ambiguous way. Do you consider a
TNC as hardware? By implication, I reckon you are - after all how do you
characterise the microcode in ethernet adapters?

> This can be resolved by having a network interface that's capable of
> receiving all the packets at full network bandwidth and passing only
> the ones in which higher layers have registered an interest upwards.
> This is certainly feasible at 1200 baud with a TNC, but gets a bit
> more tricky at Glenn's 230.4 kbps or on an ethernet!

It only gets tricky if you continue to use what you have without
alteration. This sig is surely about discussing the necessary
alterations. There is nothing in the proposals that prevent firmware or
microcode being arranged such that multicast shouldn't be viable. It's
just we don't have the agreed mechanism either for the broadcast
protocol or where and how it is to be implemented - but to say it isn't
inherently possible at ethernet speeds is just plain wrong.

Also you may say that the current hardware we use is incapable - but how
many of us are using multiple 9600 baud channels, 1200/2400 baud
channels in BPQ switch code and a BBS on top of that (or in my case BPQ,
a BBS, a Packet Cluster, IP router and network analysis software - ALL
requiring continuous access to the whole AX25 datastream on ALL 7
channels (one an ethernet AX25 connection))?

There will be a fuller explanation of the second sort of broadcast
protocol as soon as I can precis the relevant paper.

Dirk g1tlh

155. Re: Broadcast Protocols & networks

From: djk@dirku.demon.co.uk (Dirk-Jan Koopman)
Date: Thu, 23 Jun 1994 06:06:54 +0200 (BST)
To: netsig@tcet.unt.edu
Message-ID: <m0qGh02-0004g8C@dirku>
Rendered body type: text/plain

Outline of a Broadcast Protocol using 'Negative Acknowledgement'
==

A better generic name for this protocol might be 'group communication' rather than a 'broadcast protocol'. It is designed to be used in a situation where a number of packets of information must be shared _reliably_ between a relatively small group of stations which can normally hear one (central) station which we shall call the sequencer.

Actually relatively small could be a quite large number (as hopefully will become apparent). 'Small', in this case really means 'finite'.

The protocol described is precised from [Tanenbaum 1992 - Modern Operating Systems] and also [Kaashoek et al - Group Communications in Amoeba and its Applications]. I say precised, because most of the detail has been left out - hopefully not to detriment of understanding! There is nothing the principles outlined which are Amoeba specific. In particular whether you impliment this on top of AX25 or Amoeba FLIP or IP is largely irrelevant.

There are some particulars left out in this document which include joining and leaving a group plus some housekeeping details which are probably implementation and underlying transport dependant.

Group communications is so called because you are communicating with a closed (or finite) group of other stations.

The aim of this protocol is to allow reliable communications from one member of the group to the whole group with at an average of just over two packets _for_ _the_ _whole_ _group_ (if incoming packets are on the same frequency) or just over one packet if incoming packets are on another frequency. Also the order of the packets is _guaranteed_.

Before you can start, as touched on earlier, a special station must be selected to act as a 'sequencer'; as an aside, in Amoeba, this is done by election as it is a multiprocessor based OS and all kernels are created equal for this task; in our use it is much more likely that we will have a suitably located station dedicated (at least partly) to this purpose.

The sequence of events is roughly as follows:-

There are 4 stations in the group (A,B,C,D say) and the sequencer station (S).

Station A wishes to send a message to all the other stations in the group.

Therefore:

Station A send a packet addressed to the sequencer S, with a unique message ID (used to detect duplicates), the number of the last broadcast received by this station (used as a piggyback acknowledgement) and the message data itself. This station then starts a timer.

If the broadcast comes back (from S) before the timer runs out, the sending station stops its timer and carries on (updating the number of the last broadcast heard). If the broadcast is not heard and the timer has expired then (in this case) A assumes that either the message or the broadcast is lost. In either case the message is retransmitted. If the message was lost then S broadcasts it in the normal way else S detects it as a duplicate and a simple acknowledgement is sent back to A instead. The message isn't broadcast again.

There is another possibility in that it might get another broadcast, from (say) B, in this case A knows that its message might well have got thru, it queues the message from B and still waits for its broadcast to arrive from S or its timer to expire.

At the sequencer S the following things happen when a point to point message arrives for broadcast:-

First a check is made to see if it is a retransmission, if it is then the sender is sent a personal acknowledgement (as above).

If the message is a new one then the 'next sequence no' is applied to it and the 'next sequence no' is incremented, ready for the next time. The message and its indentifier is stored in a 'history buffer' and the message is then broadcast. If the sequencer happens to have an application process on it that is registered as part of the group then the message is then made available to it.

Now let us look at what happens when one of the other stations (B,C or D) receives a broadcast:-

First the sequence no of the broadcast is compared to the last sequence no received (ie of the most recently received broadcast message). If the new one is exactly one higher, no broadcasts have been missed. The station then processes the packet.

If the sequence no of the packet is more than one greater than the last one received then one (or more) broadcasts has been missed. The broadcast that has been heard is queued and a point to point request is sent to the sequencer S asking for a (private, in Amoeba) retransmission of the missing packet(s). When it (they) arrive, all the packets are then passed up to the application in sequence no order as though nothing had happened. The only thing that has occurred is a time delay.

An example:-

If a newly received broadcast has sequence no 25 and that the last sequence no received was 23, the protocol is immediately alerted to the fact that it has missed no 24. It sends a point to point message to the sequencer to this effect, the sequencer replies by resending message no 24 from its history buffer. When sequence no 24 is received packets 24 and 25 are passed up to the application (in that order) as if they had simply arrived together.

The history buffer in the sequencer requires management. If nothing is done then the history buffer will quickly fill up. There are several ways that sequencer can determine that a certain no of messages have been received by each member of the group:-

1. Each request for broadcast message (from (say) station A to S contains a the sequence no (k) of the last received broadcast (the piggybacked acknowledgement). This means that all broadcasts up to and including (k) have been received.

2. If a station has been silent for a certain (comparitively long) period of time it is required to send a short acknowledgement message informing the sequencer of its last heard broadcast sequence no.

3. If the sequencer has not heard anything for (even longer) period of time or its history buffer grows over some threshold size it can send 'request for status' broadcast (or point to point messages), which directs all (some) stations to send it a message telling it the last broadcast sequence no received.

In all cases if there are missing broadcasts detected, by inference, then the missing packets are resent.

In addition to the above, it is possible to produce any degree of fault tolerance into the system with a proportion of extra overhead. The degree of fault tolerance (ie the no of 'sequencer' stations that can go down before communications become unreliable) is selectable - but the more 'back-ups' you have the more traffic is incurred. The mechanism for this is outside the scope of this article - especially as I don't think it particularly relevant for our purposes at the moment.

In summary then:-

This protocol allows reliable broadcasting to be done on an unreliable network in just over two packets per reliable broadcast (if all stations are on the same Tx and Rx frequency, nearly one if the frequencies are different).

All application programs receive all messages in the same order regardless of how many are lost.

The worst that can happen is that short delay is introduced when a packet is lost, which should happen comparively rarely if the sequencer site and its frequency are carefully chosen.

If two processes attempt to broadcast at more or less the same time, one
of them will get to the sequencer first and win. The other will see a
broadcast from from the first station and wait, in case its message has
been queued and thus will appear shortly. If it doesn't, then it simply
resends.

Radio Issues
============

This protocol should form the basis of a group communications protocol
particularly where direct 'real-time' one to (n) communications are
desirable; examples include DX cluster user access for DX spots etc or
'chat' servers. This could (probably) be done using AX25 UI frames.

It is perfectly possible to implement this protocol (or at least the non
sequencer user part of the protocol) within a TNC or near equiv with
minimal overhead.

156. Re: Broadcast Protocols & networks

From: agodwin@acorn.co.uk (Adrian Godwin)
Date: Thu, 23 Jun 94 13:37:37 +0100
To: netsig@tcet.unt.edu
Message-ID: <9406231237.AA01949@snark.acorn.co.uk>
Rendered body type: text/plain

[Note : having re-read through this, it reads rather like an attempt to
  batter you into submission with one argument after another. That's
  not the idea - it's just my habit of trying to answer the followup
  question at the same time as making the point. Sorry :-).
]

> > read. This causes us to tie up a good deal of the processing power of
> > the computer to no purpose.
>
> Which computer? (q.v.)

OK - I admit to a preference for the high bang-per-buck available from
retired machines rather than new gear. I'm not talking C64s here,
more like Sun 3s, but maybe I might as well - perhaps it's unreasonable.

Alan Cox tells me Linux copes admirably with multiple 9600 TNCs, which
is better than any of my systems could manage.

> You are using the term 'hardware' in an ambiguous way. Do you consider a
> TNC as hardware? By implication, I reckon you are - after all how do you
> characterise the microcode in ethernet adapters?

Yes, you're right. I'm using the term here to imply any comms adapter that
doesn't load the user's processor at a rate dependent on the overall
network usage. An intelligent front end, a packet-filtering TNC,
even a router all qualify. A Baycom modem, a Kiss TNC, a HDLC card,
even (to a lesser extent) a DMA-capable HDLC card, don't.

> It only gets tricky if you continue to use what you have without
> alteration. This sig is surely about discussing the necessary
> alterations. There is nothing in the proposals that prevent firmware or
> microcode being arranged such that multicast shouldn't be viable. It's
> just we don't have the agreed mechanism either for the broadcast
> protocol or where and how it is to be implemented - but to say it isn't
> _inherently_ possible at ethernet speeds is just plain wrong.

Quite true. If you actually _want_ to receive all the broadcasts, clearly
you've got to be able to keep up with them. But networks used as LANs
should have enough capacity for all their users : the 1200 baud system
is completely upside down in this respect, since any one user can easily
saturate it. I tend to expect better performance the more local the
connection is, so in that sense a LAN/WAN model is reasonable (even
though IP or any scalable network architecture tends to blur the
distinction).

>
> Also you may say that the current hardware we use is incapable - but how
> many of us are using multiple 9600 baud channels, 1200/2400 baud
> channels in BPQ switch code and a BBS on top of that (or in my case BPQ,
> a BBS, a Packet Cluster, IP router and network analysis software - ALL
> requiring continuous access to the whole AX25 datastream on ALL 7
> channels (one an ethernet AX25 connection))?

Certainly, if you need to run network analysis software, you have to
see everything. But can you run that on the ethernet interface when
the network's busy ? Even now, good machines can keep up with full
ethernet rates outside the ethernet interface .. but does that apply
to 100MHz ethernet ? Network hardware will, we hope, stay a jump
ahead of CPU and OS capability, and I'd like to see something
approaching ethernet speeds on the local system within the lifetime
of the next set of protocols.

Other than the network monitor, consider the reduced load if you
didn't receive the packets you don't want : the BPQ and IP routers
are only really interested in broadcast and through traffic, the
packet cluster in interested only in your updates (not the circuits
to other nodes). The BBS _will_ take a fair proportion of the
traffic, but only because in a given area many users are actually
talking to the BBS. If you're unfortunate enough to be able to
hear users on another BBS (or even that other BBS itself) which is
fairly likely given the UK's frequency planning, you're taking
perhaps 100% more traffic than you actually want to deal with.

I'd also be interested to know how well that system runs - for instance,
what's the latency through the IP router when the BBS is doing
several disc accesses and a busy channel is putting a heavy interrupt load
on the BPQ software ? Are you using HDLC adapters / KISS TNCs with
a per-character interrupt load, or do you get per-packet interrupts
from a DMA card ?

I'm more concerned to make sure that new protocols should be scaleable
to the network hardware we really want, rather than today's limitations.
Sure, any system can easily keep up with a 1200 bps continuous stream.
But a continuous 56kbps stream would take a reasonable proportion of
a current machine's power - would you want to spend 50% of the processing
power available just to discard news broadcasts, when you wanted to have
the receiver running to pick up DX cluster broadcasts ? Now, current
traffic wouldn't do much to fill a 56kbps channel, especially if
broadcasts were used to reduce duplicate transmissions - but like
most things, network traffic rises to fit the bandwidth.

Just to show what you might need to keep up with, consider a future
amateur satellite hosting a packet-broadcast repeater based on D-MAC
hardware. 20Mbps (uncorrected) data to every receiver in the footprint,
and heavily repeated to avoid the overhead of passing naks round the
system for a retransmission in the same pass. If the protocols can
be handled in a comms adapter, a fairly reasonable data rate (made from
one of all the possible interleaved data streams) might be available
to the host. If all the frames have to be passed up through the
application system to be examined, then compared with disc files to
discard already-received articles, your machine flatlines during every
pass of the satellite!

I know that to some extent, you can allow the improved processing
speed of newer systems to make up for inefficiencies, and it's even
possible for processors to run faster than the front-ends originally
designed to share their load (I recall that some people found it faster
to use the improved CPUs in later Amigas than the blitter hardware),
but conversely, consider how Window's use of a less hardware-dependent
graphics protocol has permitted the use of graphics accelerator cards,
despite making things slower for the bottom end.

-adrian

157. PB Broadcast Server Source

From: jwt@twics.com
Date: Fri, 24 Jun 1994 10:09:08 JST
To: netsig@tcet.unt.edu
Message-ID: <009806D1.897816E0.7@tanuki.twics.com>
Rendered body type: text/plain

Okamoto-san, JN2LHU, has implemented the PB broadcast
protocol for MS-DOS machines. His main goals were
to learn more about the broadcast protocol used and to
create a demonstration vehicle for the user PB software
without the hassles and time pressures of actually having
a satellite go overhead.

Since he has distributed the source, it might make a good
starting point for further exploration of PB's use
terrestrially. His program expects a directory of files
in Pacsat .DL format (i.e. containing their Pacsat headers).

I've uploaded the C source (for the LSIC C Compiler) as:
  ftp.ucsd.edu:hamradio/packet/tcpip/incoming/pbsv004.zip
I found it necessary to change only a few of the DOS-specific
include files and structure definitions to get it to compile
under Borland C.

73, Jim 7J1AJH/AI8A   jwt@twics.co.jp

158. Re: Broadcast Protocols & networks

From: djk@dirku.demon.co.uk (Dirk-Jan Koopman)
Date: Fri, 24 Jun 1994 20:35:34 +0200 (BST)
To: netsig@tcet.unt.edu
Message-ID: <m0qHH2E-0004g8C@dirku>
Rendered body type: text/plain

Thank you Adrian for your considered reply. The problem is that we are
not addressing the same issues. Most of what you say applies to point to
point links - and I would probably agree with most of it.

My interest is primarily in improving user access to services provided
on the network. I am concerned that, as I sit here watching what my
users are doing, the users are basically doing the same thing
repetitively AND, at the same, wasting 82% of the available bandwidth
(on a good day!).

I have no argument that internode / BBS / Cluster traffic should be on
dedicated links - I refuse to be drawn on which protocol should be used
on those links, although I have made noises in the past along the lines
of 'a plague on both your houses'.

No, the challenge of today (and what, as far as I am concerned started
this thread) is to improve the USER end.

This means better software, probably not running on a TNC (as such) and
using appropriate protocols for their optimum application. AX25 (or TCP)
are usable point to point protocols for genuine one to one connections.
For anything else (which includes at least 75% of what packet is
actually used for) these protocols are best less than optimum to a
downright waste of bandwidth.

I have published (under seperate cover) a broadcast protocol spec that
has had a _great_ deal of research done on it (but not by me - I have
done a fair amount on the other sort of Broadcast protocol). I believe
we should start to look very seriously at putting something like this
protocol in place for _every_ facility where anything other then
ephemeral one to one connections occurs. The facilities I have in mind
are BBSs, DX Clusters, Chat nodes and (hopefully soon) NNTP servers.

We seem to be stuck with 1200 (mainly) up to 9600 (rarely) user access.
I want to see the use of that limited bandwidth optimised.

I am actually interested in optimising _slow_ ill disciplined networks,
this seems to me to be a delightfully challenging subject.

We need a protocol stack that is optimised for RADIO, not bolted on from
telephone lands. It will need to be able to mix point to point messages
with group communications seamlessly with minimum overhead.

Can we move forward, thinking about the _best_ solution without looking
backwards over our shoulders muttering AX25 or TCP/IP continuously.

Dirk G1TLH

159. Re: Broadcast Protocols & networks

From: Jack Taylor <n7oo@huachuca-emh8.army.mil>
Date: Fri, 24 Jun 94 19:01:22 MST
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <9406250254.AA176761@tcet.unt.edu>
Rendered body type: text/plain

I for one, am interested to learn more about what Dirk, G1TLH has in mind
about improving the slow 1200 baud networks! Seems to me, if we can't
gain the most efficiency at 1200 baud in a user environment, then we are
wasting our money on higher speed only upgrades.
73 de Jack

160. Re: Broadcast Protocols & networks

From: djk@dirku.demon.co.uk (Dirk-Jan Koopman)
Date: Sat, 25 Jun 1994 10:21:36 +0200 (BST)
To: netsig@tcet.unt.edu
Message-ID: <m0qHTvd-0004g8C@dirku>
Rendered body type: text/plain

Is it just me or has it got awfully quiet around here? Er... where are
you.....

Speak to me!

Dirk

161. Re: Broadcast Protocols & networks

From: Steve Cooper <cooper@cwis.unomaha.edu>
Date: Sun, 26 Jun 1994 19:07:31 -0500 (CDT)
To: netsig@tcet.unt.edu
Message-ID: <9406270007.AA15789@cwis.unomaha.edu>
Rendered body type: text/plain

We all ran off to field day

Thanks,

Steve
N0KVC>
> From: djk@dirku.demon.co.uk (Dirk-Jan Koopman)
> Subject: Re: Broadcast Protocols & networks
> To: netsig@tcet.unt.edu
> Date: Sat, 25 Jun 1994 10:21:36 +0200 (BST)
>
> Is it just me or has it got awfully quiet around here? Er... where are
> you.....
>
> Speak to me!
>
> Dirk
>
>

162. Gracilis PackTen Switch

From: Errol Casey <gcasey@backdoor.morrisville.nc.us>
Date: Sun, 26 Jun 94 22:19:07 EDT
To: netsig@tcet.unt.edu
Message-ID: <2e0e371d.backdoor@backdoor.morrisville.nc.us>
Rendered body type: text/plain

The Wake Digital Communication Group has recently began working towards
updating the packet networking equipment in our area. Our plans are
to move to 9600 baud on 2m and 440. The heart of the system will probably be
a Gracilis PackeTen Switch.

I would be greatful for any comments (good or bad), and any details from
those that are using this equipment. I will also be posting a similar
message to gracilis mailing list (but thought I might get additional
feedback from netsig).

Errol Casey
VP WDCG
Raleigh, NC (Wake County)

163. Re: Broadcast Protocols & networks

From: barnaby@world.std.com (Richard L Barnaby)
Date: Mon, 27 Jun 1994 04:28:47 -0400
To: netsig@tcet.unt.edu
Message-ID: <199406270828.AA21070@world.std.com>
Rendered body type: text/plain

Hi Dirk,
I'm here! Lurking as usual.
I'm just "learning", so not much to contribute, but "ya gotta start
somewhere". How about "no new is good news?" (hi)

de AA1IB Barnaby

164. Archives?/Packet Network Repeaters

From: "Frank Alwine" <falwine@VNET.IBM.COM>
Date: Mon, 27 Jun 94 13:59:37 EDT
To: netsig@tcet.unt.edu
Message-ID: <9406271809.AA102493@tcet.unt.edu>
Rendered body type: text/plain

Hello to all - I'm new to the list, and would like to know where I can find
the archives of past postings....

Also, I'm looking for any information I can find on building/using digital
repeaters for packet networking. I'm involved with a group building a UHF
packet backbone system here in Vermont (based on TheNet X1J firmware) and
we may need to use a repeater at one location in our network. Your
experiences with 1200-9600 baud repeaters, both bit-regenerating and other-
wise, would be appreciated, along with any practical info on how to build
one.

Thanks & 73,

Frank N1GPY   falwine@vnet.ibm.com N1GPY@N1GPY.#NWVT.VT.USA.NOAM

165. Re: Network Repeaters

From: Greg Jones <gjones@tenet.edu>
Date: Mon, 27 Jun 1994 13:40:57 -0500 (CDT)
To: netsig@tcet.unt.edu
Message-ID: <199406271840.NAA06956@Kay-Abernathy.tenet.edu>
Rendered body type: text/plain

> From: "Frank Alwine" <falwine@VNET.IBM.COM>
> Subject: Archives?/Packet Network Repeaters
> Date: Mon, 27 Jun 94 13:59:37 EDT
>
> Hello to all - I'm new to the list, and would like to know where I can find
> the archives of past postings....

Welcome. Glad to have you on-line.

Subject: TAPR SIG Archives
Date: Sat, 18 Jun 1994 11:20:16 -0500 (CDT)
Contnt-Length: 122

The TAPR SIG mail exchange archives are being made available via FTP access.

system: tcet.unt.edu (129.120.20.191)

directory: tapr/SIG

Greg

166. Re: Network Repeaters

From: ahgroff@dz12.cca.rockwell.com (A.H.Groff)
Date: Mon, 27 Jun 94 14:39:18 CDT
To: netsig@tcet.unt.edu
Message-ID: <9406271939.AA08383@dz12.cca.rockwell.com>
Rendered body type: text/plain

Frank, N1GPY writes :
>Also, I'm looking for any information I can find on building/using digital
>repeaters for packet networking. I'm involved with a group building a UHF
>packet backbone system here in Vermont (based on TheNet X1J firmware) and
>we may need to use a repeater at one location in our network. Your
>experiences with 1200-9600 baud repeaters, both bit-regenerating and other-
>wise, would be appreciated, along with any practical info on how to build
>one.
>
 We have recently put a 9600 baud bit regen UHF repeater on the air in
Cedar Rapids.
built around the TAPR MODEM with the bit regen option. The modem is install in
a MFJ1270 with THENET which allows cross connect to other nodes on site.
We are using Motorola Flexar radios for XMT and RCV modified for 9600 data
and a standard repeater duplexor.
The MODEM DCD drives the PTT in repeat mode and the TNC beacon function
provides a repeater ID. Its relatively straight forward and sure gets rid of the
hidden transmitter problem with out introducting digipeater or node transport
delays.

Al, K0VM

167. Re: Broadcast Protocols & networks

From: Adrian Godwin <agodwin@acorn.co.uk>
Date: Tue, 28 Jun 1994 16:34:21 +0100
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <9406281534.AA18024@snark.acorn.co.uk>
Rendered body type: text/plain

> From: djk@dirku.demon.co.uk (Dirk-Jan Koopman)
>
> Thank you Adrian for your considered reply. The problem is that we are
> not addressing the same issues. Most of what you say applies to point to
> point links - and I would probably agree with most of it.
>

I'm not sure about that - I thought I was mostly arguing for a broadcast
protocol that would still work when speeds were much higher and when
the number of services available were many more than the 2 or 3 we use
now.

> For anything else (which includes at least 75% of what packet is
> actually used for) these protocols are best less than optimum to a
> downright waste of bandwidth.

Yes .. but is that because that's what the users most want to do, or because
the users are heavily using the only well-supported applications we have ?
It's certainly possible that broadcast-like applications (converse, bbs,
dxcluster) _are_ what hams want. But if other applications with different
requirements like high bandwidth, long-distance, reliable delivery (voice,
video, access to compute- or archive-servers, were feasible on a large
scale in our networks, wouldn't they also be popular ? While it's almost
certainly worth making improvements to the current way of doing things to
support current applications, it's dangerous to predict future requirements
by simply multiplying current usage.

>
> I have published (under seperate cover) a broadcast protocol spec that
> has had a _great_ deal of research done on it (but not by me - I have

Thank you for this. Followed up separately to avoid too long a post ...

>
> We seem to be stuck with 1200 (mainly) up to 9600 (rarely) user access.
> I want to see the use of that limited bandwidth optimised.
>
> I am actually interested in optimising _slow_ ill disciplined networks,
> this seems to me to be a delightfully challenging subject.

   " I mention this because funding agents looking for high speed,
     next-generation networks may forget that research to make slow
     things go fast sometimes makes fast things go faster. "

                                                - Van Jacobson

A good point, and I agree. However, you've got to look where you're
going. People won't always be satisfied with slow networks. It would be
wonderful to have fast, efficient, ill-disciplined networks! Some of
the compromises we make now - especially wrt using IP - assume that
one day our problems will be fixed by speeding up the networks, and
therefore it isn't worth fixing them for slow networks. This may be
a mistake, but a solution that _only_ works on a slow network (because
it's computationally intense, perhaps, or has a speed limit imposed
by some physical constant that isn't a problem at low speeds) can also
be misguided and result in a need to constantly redesign.

> We need a protocol stack that is optimised for RADIO, not bolted on from
> telephone lands. It will need to be able to mix point to point messages
> with group communications seamlessly with minimum overhead.
>
> Can we move forward, thinking about the _best_ solution without looking
> backwards over our shoulders muttering AX25 or TCP/IP continuously.

Fine, but there's a broad selection of incompatible protocol worlds
already available. Interworking with them is useful, and it's well
worth avoiding a complete redesign if only a modification (perhaps one
that is valuable in the wired world, too) is required.
Are the problems that exist in those existing standards inherent in
their design, or simply an area that hasn't been tackled yet, like
the reliable broadcast protocol you described ? If we can fix an existing
system, don't we get the best of both worlds ?

-adrian

168. Re: ARRL 9th CNC

From: Glenn Elmore <glenne@sr.hp.com>
Date: Tue, 28 Jun 1994 08:53:07 -0800 (PDT)
To: netsig@tcet.unt.edu
Message-ID: <9406281553.AA01053@eagle.sr.hp.com>
Rendered body type: text/plain

Adrian wrote:

> Subject: Re: ARRL 9th CNC
>
> Contact the authors of all the papers to obtain permission for
> electronic storage and free retrieval of their work. The authors of
> the papers in the 9th proceedings should be made a priority.
>
> Obtain electronic copies where available - from the authors, from
> the ARRL, from existing partial archives. Create electronic versions
> where necessary - by retyping, generating Postscript figures, even
> scanning hand-drawn figures. There's a fair bit of work involved,
> but the total is still relatively small if a few people are willing
> to help. We're not talking about the back issues of QST here !
>
> Make the electronic copies available on the ARRL fileserver (assuming
> they're willing) or elsewhere as and when the paper copies are
> exhausted (so initially, only the 9th conference will be completely
> available this way).
>

In response, I've converted (mangled?) two of my cnc papers into postscript
form. They are available by anonyomous from col.hp.com under
~/hamradio/packet/n6gn/arrlcnc. Here's the readme.

```
------------------------------------------------------------------------------
cnc9a.ps    CNC 9 "Physical Layer Implications of an Amateur High Speed Network"
cnc10.ps    CNC 10 "Recent Hubmaster Networking Progress in Northern California"
```

These files are postscript renditions of papers authored by n6gn
in the ARRL Computer Networking Conference proceedings. Since the 9th
proceedings is out of print, I've endeavored to make postscript
versions available for general access. In the case of cnc9a.ps, this
meant translation from the original troff scrolls so I hope something
wasn't lost in the process.
  Still missing is cnc9b which is the original Hubmaster paper co-authored by
n6gn, n6plo and n6rce. Hopefully I'll be able to get that moved to ps as
well.

```
------------------------------------------------------------------------------
```

73
Glenn n6gn

169. Re: Broadcast Protocols & networks

From: Adrian Godwin <agodwin@acorn.co.uk>
Date: Tue, 28 Jun 1994 19:36:18 +0100
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <9406281836.AA18155@snark.acorn.co.uk>
Rendered body type: text/plain

> From: djk@dirku.demon.co.uk (Dirk-Jan Koopman)
>
> Outline of a Broadcast Protocol using 'Negative Acknowledgement'
> ==

Thanks for describing this .. I got bogged down on the FLIP paper and
hadn't got as far as reading the description of this protocol. However,
curiosity about some of the areas you'd glossed over made me read it
up, which was interesting.

It does sound a pretty good scheme (and even overcomes my religous
objections, sincs it could clearly be implemented on top of the
protocol of your choice, given appropriate mangling of the API), but
I think it might suffer from a certain amount of unsuitability in our
environment. Sadly, I think some of this derives from it's generality -
it solves some problems we don't always have, but at the cost of
overheads we'd rather do without (and which were less important to
it's designers). Some of these problems can also be fixed, perhaps
trivially, but perhaps not all of them. Fixes welcome ...

First, what do we want from a broadcast : this is by no means the same
for all the applications.

News (BBS bulletins)

Ideal is for the server to loop around the current newsbase, so a user
can join at an arbitrary time and obtain a copy of the entire spool.
Reliability isn't critical - it doesn't matter if it takes some time
to notice a missing packet (though it's nice if it's noticed eventually).

There's one server and multiple clients - the clients aren't trying
to contribute to the news stream (though you could regard the entire
world as a contributing group .. but that's not finite size, causes
lots of problems that this protocol doesn't attempt to address).

Converse (chat server)

Timeliness is important here (you want to know you're up to date with
the conversation when ou interject, otherwise you lose the real-time-ness
of the application.
All clients contribute.
There's no start or end to the stream - a user doesn't expect to
catch up on preceding conversations and can leave whenever necessary.
Main expectation is of local chat, though non-local operation would
be a big win if the network bandwidth can handle it.

DX cluster

Timeliness is important - it's not good enough to hear of a spot late.
All clients contribute
There's no start or end to the stream, though a short history might
be useful (get the last day's spots when you log in ?)
Non-local operation is important.

> A better generic name for this protocol might be 'group communication'
> rather than a 'broadcast protocol'. It is designed to be used in a
> situation where a number of packets of information must be shared
> _reliably_ between a relatively small group of stations which can
> normally hear one (central) station which we shall call the sequencer.

This is OK, assuming that you can divide the network into small clusters.
Great for BBS access, pretty good for converse. DX cluster needs either
directed broadcasts or a super-broadcast net (like BBS news but faster)
to keep all the clusters together. Not a problem.

> Actually relatively small could be a quite large number (as hopefully
> will become apparent). 'Small', in this case really means 'finite'.

Fine if you just consider the stations near a single server, i.e.
in broadcast range.

> The protocol described is precised from [Tanenbaum 1992 - Modern
> Operating Systems] and also [Kaashoek et al - Group Communications in
> Amoeba and its Applications]. I say precised, because most of the detail

I got additional detail from 'Efficient reliable group communication
for distributed systems' Kaashoek & Tanenbaum (group.ps) - I haven't
read the references you mention. Sorry for any resulting errors.

> First the sequence no of the broadcast is compared to the last sequence
> no received (ie of the most recently received broadcast message). If
> the new one is exactly one higher, no broadcasts have been missed. The
> station then processes the packet.
>
> If the sequence no of the packet is more than one greater than the last
> one received then one (or more) broadcasts has been missed. The broadcast
> that has been heard is queued and a point to point request is sent to
> the sequencer S asking for a (private, in Amoeba) retransmission of the
> missing packet(s). When it (they) arrive, all the packets are then
> passed up to the application in sequence no order as though nothing had
> happened. The only thing that has occurred is a time delay.

This means that you only hear about a missed packet when the next packet
arrives. This is a problem : it requires a continuous stream to ensure
that updates are applied in a timely manner. It can be fixed by transmitting
null packets, but that seems a poor solution - you don't want to send
a lot of empty packets, but you can't tell that you're up to date without
the server sending something. Although wasted bandwidth under low-traffic

conditions sounds OK, the channel usage is mixed : DX cluster might be
light while BBS traffic is high. Exponentially-increasing times between
null packets might be a solution.

This is a problem in all applications : DX cluster spots arriving
only when another update comes through or another user's converse input
only appears after you've typed yours. For BBS updates, it's fixable
by just sending the spool again .. but is it desirable to use constant
bandwidth regardless of the amount of new news ?

> The history buffer in the sequencer requires management. If nothing is
> done then the history buffer will quickly fill up. There are several
> ways that sequencer can determine that a certain no of messages have
> been received by each member of the group:-
>
> 1. Each request for broadcast message (from (say) station A to S
> contains a the sequence no (k) of the last received broadcast (the
> piggybacked acknowledgement). This means that all broadcasts up to and
> including (k) have been received.
>
> 2. If a station has been silent for a certain (comparitively long)
> period of time it is required to send a short acknowledgement message
> informing the sequencer of its last heard broadcast sequence no.
>
> 3. If the sequencer has not heard anything for (even longer) period of
> time or its history buffer grows over some threshold size it can send
> 'request for status' broadcast (or point to point messages), which
> directs all (some) stations to send it a message telling it the last
> broadcast sequence no received.

Fine for converse, not so good for DXC and BBS. Neither of these have
regular input from all clients, so the system always has to poll them
to ensure they haven't dropped off the group. This is particularly
annoying, as you actually don't care (in these applications) if your
message isn't delivered : it's the client who cares. The protocol
allows for this with it's low-reliability option (it makes it possible
to send without getting confirmation that all the clients received)
but it still requires the polling to keep the history buffer managed.

This is a good example of the generality biting back : we don't require
reliable delivery, only reliable reception (I know that sounds stupid,
but I think I know what I mean!) but the implementation of an open
group by means of closed groups forces us to track the update state
of each client in the server (and in all the clients too, though that's
really for recovery, another item we don't need here). All we really want
is for each client to track it's own status.

The Amsat protocol avoids this problem by using the entire news spool
as a history buffer, so buffer management isn't a problem (and very out
-of-date clients can just lose the articles), but it loses generality -
it doesn't work so well on a continuous-update scheme like converse
and DX cluster.

> The worst that can happen is that short delay is introduced when a
> packet is lost, which should happen comparively rarely if the sequencer
> site and its frequency are carefully chosen.

No, worst is when there _isn't_ an update : the timeout mechanism ensures
that a client sending to the server times out the server's broadcast.
It doesn't apply when there simply hasn't been a broadcast. That would
be up to the application to decide, and I don't think finding a sensible
timeout would be easy.

Note also that it's assumed that communications are low-loss - negative
acknowledgement is attempting to optimise for the 'common' case, where
nearly all packets get through. This blatantly isn't the case for us -
and though we badly need to fix it, I don't know how well we can do.
Certainly I wouldn't try to use this on __current__ systems, though
only FEC or repeaters might be sufficient to make it workable.
Maybe we should use protocols that assume _high_ packet loss (I'm not
sure how seriously I mean that).

-adrian

170. Re: Broadcast Protocols & networks

From: Glenn Elmore <glenne@sr.hp.com>
Date: Tue, 28 Jun 1994 12:45:53 -0800 (PDT)
To: netsig@tcet.unt.edu
Message-ID: <9406281945.AA04964@eagle.sr.hp.com>
Rendered body type: text/plain

> From: Adrian Godwin <agodwin@acorn.co.uk>
> Subject: Re: Broadcast Protocols & networks
> To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
> Date: Tue, 28 Jun 1994 16:34:21 +0100
>
> > From: djk@dirku.demon.co.uk (Dirk-Jan Koopman)
> > >
>
> A good point, and I agree. However, you've got to look where you're
> going. People won't always be satisfied with slow networks. It would be
> wonderful to have fast, efficient, ill-disciplined networks! Some of
> the compromises we make now - especially wrt using IP - assume that
> one day our problems will be fixed by speeding up the networks, and
> therefore it isn't worth fixing them for slow networks. This may be
> a mistake, but a solution that _only_ works on a slow network (because
> it's computationally intense, perhaps, or has a speed limit imposed
> by some physical constant that isn't a problem at low speeds) can also
> be misguided and result in a need to constantly redesign.
>
> > We need a protocol stack that is optimised for RADIO, not bolted on from
> > telephone lands. It will need to be able to mix point to point messages
> > with group communications seamlessly with minimum overhead.
> > >
> > Can we move forward, thinking about the _best_ solution without looking
> > backwards over our shoulders muttering AX25 or TCP/IP continuously.

  I believe that there *is* a "physical constant" which sets an inherent
speed limit for amateur radio which protocols alone will not fix. This
is the essence of the bulk of my 9th CNC paper, now out of print by the
ARRL, which I just made available.

  The constant has to do with the fact that information/energy transmitted by
radio is, in general, not a guided wave but diverges. This
characteristic causes economical wireline and fiber solutions (guided)
and radio to have very different physical implementations.

  While I agree that optimizing what we presently have is useful (and at
least indirectly mandated by FCC rules) if we don't consider things a
bit more globally I think that significant improvement is not possible
with amateur resources. We simply must do the radio part differently
and better and this has consequences at higher protocol layers.

Glenn n6gn

171. Re: ARRL 9th CNC

From: Adrian Godwin <agodwin@acorn.co.uk>
Date: Wed, 29 Jun 1994 13:33:42 +0100
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <9406291233.AA20998@snark.acorn.co.uk>
Rendered body type: text/plain

> From: Glenn Elmore <glenne@sr.hp.com>
>
> In response, I've converted (mangled?) two of my cnc papers into postscript
> form. They are available by anonyomous from col.hp.com under
> ~/hamradio/packet/n6gn/arrlcnc. Here's the readme.
> --
> cnc9a.ps   CNC 9 "Physical Layer Implications of an Amateur High Speed Network"
> cnc10.ps   CNC 10 "Recent Hubmaster Networking Progress in Northern California"
>

Thanks. I've tracked down some email and snail addresses from the 9th
proceedings, as shown below. Perhaps any of other contributors who read
this list could do something similar. I'm happy to email the remainder
and snailmail the europeans : perhaps someone in the US could volunteer
to snailmail the US contributors where we can't find an email address.

Although some papers may be out of date or superceded by later writings,
I still think it's worth archiving them for historical reasons, if the
work involved isn't excessive.

I've only listed the 9th CNC contents here, though it's worth asking for

other papers if the authors have them. If you know of more recent addresses
for any of the following (or if you're in touch any of them personally),
please say so.

-adrian

Already available :

Physical Layer Considerations in building a high speed amateur radio network
 Glenn Elmore N6GN
 550 Willowside Rd. Santa Rosa, CA 95401
 Available by anonyomous ftp from col.hp.com under
 ~/hamradio/packet/n6gn/arrlcnc. Here's the readme.
 ----
 cnc9a.ps   CNC 9 "Physical Layer Implications of an Amateur High Speed Network"
 cnc10.ps   CNC 10 "Recent Hubmaster Networking Progress in Northern California"

MACA - A New Channel Access Method for Packet Radio
 Phil Karn KA9Q
 Anonymous ftp from ftp.ucsd.edu:/hamradio/packet/arrlcnc/1990/maca.{ms,ps}.Z

Known to be Active on Usenet or internet mailing lists :

Considering Next-Generation Amateur Voice Systems
 Jon Bloom, KE3Z, jbloom@arrl.org

Hubmaster: Cluster-Based Access to High-Speed Networks
 Glenn Elmore N6GN, Kevin Rowett N6RCE, Ed Satterthwaite N6PLO
 glenne@sr.hp.com

Adaptation of the KA9Q TCP/IP Package for Standalone Packet Switch Operation
 Bdale Garbee N3EUA (bdale@col.hp.com), Don Lemley N4PCR, Milt Heath
 (is this one of the papers in hamradio/packet/tcpip/docs on col.hp.com ?)

The Network News Transfer Protocol and its use in packet radio
 Anders Klemets, SM0RGV
 Swedish Institute of Computer Science, Box 1263, S-164 28 Kista, Sweden
 Anders.Klemets@cs.cmu.edu

The PackeTen System   The Next Generation Packet Switch
 Don Lemley N4PCR,
 donl@gracilis.com
 632 Palace Street, Aurora, Illinois 60506.
 Milt Heath, 75 S. Chestnut Street, Aurora, Illinois 60506

PACSAT Protocol Suite - An overview
 Harold E. Price NK6K, Jeff Ward G0/K8KA
 hprice@bektek.com

PACSAT Data Specification Standards
 Harold E. Price NK6K, Jeff Ward G0/K8KA

Pacsat Protocol: File Transfer Level 0
 Jeff Ward G0/K8KA, Harold E. Price NK6K

PACSAT Broadcast Protocol
 Harold E. Price NK6K, Jeff Ward G0/K8KA

PacSat File Header Definition
 Jeff Ward G0/K8KA, Harold E. Price NK6K

Email address avalable, untested :

(Inclusion in this list doesn't mean they're not active, just that I didn't
 see their posts or I failed to remember the callsign. Some email addresses
 were found in the Amateurs on Usenet list and may be quite recent).

Digital Regenerator modification for the TNC-2A

William A Beech NJ7P
RR-2 Box 1640, Sierra Vista, AZ 85635. bbeech@huachuca-emh8.army.mil
Jack Taylor N7OO, RR-2 Box 1640, Sierra Vista, AZ 85635

AVC_R_ISA: A MAC layer for NOS/net
F. Davoli, A.Giordino (I1TD), A. Imovilli (IW1PVW), C. Nobile (IW1QAP),
G. Pederiva (IW1QAN), S.Zappatore (IW1PTR) [al@dist.unige.it]
Department of Communications, Computer and System Science (DIST)
University of Genoa (IK1HLF), Via Opera Pia, 11A-16145 Genova, Italy

Forward Error Correction for Imperfect Data in Packet Radio
W. Kinsner VE4WK
Kinsner@ccm.UManitoba.CA
Department of Electrical and Computer Engineering
University of Manitoba, Winnipeg, Canada R3T-2N2. VE4WK@VE4BBS.MB.CAN.NA

CELP High-Quality Speech Processing
for Packet Radio Transmission and Networking
A. Langi and W. Kinsner VE4WK
Kinsner@ccm.UManitoba.CA
Department of Electrical and Computer Engineering
University of Manitoba, Winnipeg, Canada R3T-2N2. VE4WK@VE4BBS.MB.CAN.NA

Long Distance Packet mail via Satellite
Mark Sproul KB2ICI
1368 Noah Road, North Brunswick, NJ 08902. sproul@sproul.com
Keith Sproul WU2Z
Magnolia Road, North Brunswick, NJ 08902. wu2z@sproul.com

Texas Packet Radio Society Projects : An update
Greg Jones WD5IVD, Tom McDermott N5EG
Texas Packet Radio Society, PO Box 50238, Denton, Texas 76206-0238
greg@vaxb.acs.unt.edu, Greg.Jones@ee.SUrrey.ac.UK, wd5ivd@tapr.ampr.org
mcdermot@eagle.aud.alcatel.com

Comments on HF Digital Communications. Part 1 -- Link Level Issues
Tom Clark W3IWI, 6388 Guilford Road, Clarksville, MD 21029
w3iwi@tapr.ampr.org

Comments on HF Digital Communications. Part 2 -- Data Protocol Issues
Tom Clark W3IWI, 6388 Guilford Road, Clarksville, MD 21029

BULLPRO A Simple Bulletin Distribution Protocol
Tom Clark W3IWI, 6388 Guilford Road, Clarksville, MD 21029

Some comments on the "H"ierarchical Continent Address Designator
Tom Clark W3IWI, 6388 Guilford Road, Clarksville, MD 21029

Station Traffic System: A Traffic Handler's Utility Package
with Integrated Packet Support
Frank Warren, Jr KB4CYC, Radio Amateur Telecommunications Society
206 North Vivyen Street, Bergenfield, New Jersey 07621
hrcsup@cc.bellcore.com

The BPQ Node in an Expanding Network
Karl Medcalf WK5M, Phil Anderson W0XI, John Wiseman G8BPQ
kmedcalf@delphi.com

9600 Baud Operation
Interfacing the Kantronics DataEngine and DVR2-2 Transceiver
with the G3RUH External Modem
Phil Anderson W0XI and Karl Medcalf, WK5M
kmedcalf@delphi.com

Status Report on the KA9Q Internet Protocol Package for the Apple Macintosh
Dewayne Hendricks WA8DZP, Doug Thom N6OYU
dewayne@netcom.com

US mail address available

A Built in TNC for the Toshiba Mod. T1000
Frederic de Bros, KXIS
22 Tempole St. Boston, MA 02114

A GPS Data Receiver
Dan Doberstein
1406 Parkhurst Street, Simi Valley, CA 93065

Network routing techniques and their relevance to Packet Radio networks
 James Geier, Martin DeSimio WB8MPF, Byron Welsh KD8WG
 Air Force Institute of Technology,
 Department of Electrical and Computer Engineering,
 Wright-Patterson AFB, OH 45433

Node Networking
 Donald R. Nelsch K8EIW, 2545 N. Haven Blvd, Cuyahoga Falls, OH 44223

The "Cloverleaf" Peformance-Oriented HF Data Communication System
 Raymond C. Petit W7GHM, PO Box 51, Oak Harbor, WA 98277

Frequency-Stable Narrowband Transceiver for 10100.5 KHz
 Raymond C. Petit W7GHM, PO Box 51, Oak Harbor, WA 98277

Euro mail address available

FlexNet The European solution
 Gunter Jost, DK7WJ, Lichtenbergstr. 77, D-6100 Darmstadt. DK7WJ@DB0GV.DL.EU
 Joachim Sonnabend, Annastr. 4, D-6082 Moerfelden. DG3FBL@DB0GV.DL.EU
 FlexNet-Group, Bunsenstr. 2a, D-6100 Darmstadt. Fax 49 6151 895718

Packet radio with Rudak II on the Russian Radio-M1 mission
 Hanspeter Kuhlen, DK1YQ
 AMSAT-DL RUDAK Group, Finkenstrasse 11; D-8011 Ascheim nr. Munich
 Federal Rebublic of Germany

Current address unknown

A fast Switching, Wide Bandwidth Transceiver for 70cm Operation, The DVR 4-2
 Jerry Schmitt WX0S, Phil Anderson W0XI, Bruce Kerns

July 1994

Original source file: netsig.9407
Source: http://ftp.tapr.org/tapr_history/SIG_Archives/netsig/mail_archive/netsig.9407

1. Bit Regeneration

From: RDAI@delphi.com
Date: Fri, 01 Jul 1994 02:08:16 -0400 (EDT)
To: netsig@tcet.unt.edu
Message-ID: <01HE6BL8R9RM984OYE@delphi.com>
Rendered body type: text/plain

Could someone provide an explanation of "bit regeneration" as it applies

to high speed modems? Is there an FTP'able treatise on this topic?

TIA... Rich

```
            www
           (o o)
 ------oOO--( )--OOo-------------------------------------------------------------
| Rich Dailey, KA8OKH - 606-678-5967       | "There's a big difference      /
| Internet: rdai@delphi.com                |  between kneeling down       /
| AmPRnet: ka8okh@ka8okh.ampr.org          |  and bending over."          \
| Voice: "Hey Rich!"                       |              F.Z. (1940-1993)  \
 -----------------------------------------------------------------------------
```

2. RE: Archives/Repeaters

From: "Frank Alwine" <falwine@VNET.IBM.COM>
Date: Fri, 1 Jul 94 11:16:05 EDT
To: netsig@tcet.unt.edu
Message-ID: <9407011517.AA152730@tcet.unt.edu>
Rendered body type: text/plain

Thanks to those who responded to both my queries... I need to go through
some of the info I received on digital repeaters, and will post a summary
here if there's enough interesting info....

73 de Frank N1GPY

3. Re: Broadcast Protocols & networks

From: Adrian Godwin <agodwin@acorn.co.uk>
Date: Fri, 01 Jul 1994 16:58:43 +0100
To: djk@dirku.demon.co.uk (Dirk-Jan Koopman)
Cc: netsig@tcet.unt.edu
Message-ID: <9407011558.AA24992@snark.acorn.co.uk>
Rendered body type: text/plain

> Is it just me or has it got awfully quiet around here? Er... where are
> you.............
>

You thought that was quiet .. now look what we've done :-).

-adrian

4. Re: Bit Regeneration

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Sat, 2 Jul 1994 03:22:27 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9407020337.B27584-0100000@kazak>
Rendered body type: text/plain

On Fri, 1 Jul 1994, TAPR Network Special Interest Group wrote:

> From: RDAI@delphi.com

> Subject: Bit Regeneration
> To: netsig@tcet.unt.edu
> Date: Fri, 01 Jul 1994 02:08:16 -0400 (EDT)
>
>
>
> Could someone provide an explanation of "bit regeneration" as it applies
>
> to high speed modems? Is there an FTP'able treatise on this topic?
>
>
>
> TIA... Rich

Rich "bit regeneration" is a catchy phrase that means nothing hard to understand. A LONG time ago we proved that a common voice repeater could repeat packet. Your transmitter sent tones to the repeater receiver and those tomes are used to modulate the repeater transmitter.

But things that are good for voice are not necesarilly good for packet. These problems become acute when you try 9600 baud over a voice repeater! It will not work as a rule. So about 7 years ago it occured to someone that a tnc-2 could be put at the repeater and replace the existing voice control system.

The tnc-2 listens for a packet to it. When it gets a packet for relay it turns on the repeater transmitter and sends a packet MADE IN THE TNC. So this new packet is what's called "bit regeneration".

Yes "bit regeneration" is a packet buzz word that is designed to confuse a very simple concept. We don't need to be more confused than we already are!

73, de karl k5di@k5di

5. Re: Bit Regeneration

From: bruce@pixar.com (Bruce Perens)
Date: Sat, 2 Jul 94 12:46 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <m0qKB1I-0006CMC@mongo.pixar.com>
Rendered body type: text/plain

> The tnc-2 listens for a packet to it. When it gets a packet for
> relay it turns on the repeater transmitter and sends a packet MADE IN THE
> TNC. So this new packet is what's called "bit regeneration".

Just to distinguish the above from a digipeater:

We're not waiting for the entire packet to arrive before we start repeating it. it. In the case of the TAPR bit-regenerating modification for their 9600 Baud modem, bits are transmitted about 10 bit-times after they are received (I forgot the exact number). Part of the delay is necessary to fully decode bits and recover the bit-clock, and part is propogation delay through some registered logic.

The advantage here is that analog phenomena such as noise and "twist" are not repeated - only a nice clean newly-modulated signal.

While we're talking about full-duplex repeaters, I'd like to point out that we can do better collison-detect using full-duplex systems than our current half-duplex ones. A station need only listen for its transmitted signal coming back from the repeater. If the signal coming back from the repeater doesn't match what it transmitted a few bit-times ago (accounting for delays in the repeater, the local modem, and the speed of light), we've collided with another station and should stop transmitting immediately. We don't have to wait for the end of a packet to detect a collision, and we know we've collided so we can immediately queue the packet for retransmission rather than waiting for a time-out.

Bruce Perens AB6YM

6. Re: Bit Regeneration

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Sun, 3 Jul 1994 03:17:37 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9407030221.A22236-0100000@kazak>
Rendered body type: text/plain

On Sat, 2 Jul 1994, TAPR Network Special Interest Group wrote:

> From: bruce@pixar.com (Bruce Perens)
> Subject: Re: Bit Regeneration
> To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
> Date: Sat, 2 Jul 94 12:46 PDT
>
> > The tnc-2 listens for a packet to it. When it gets a packet for
> > relay it turns on the repeater transmitter and sends a packet MADE IN THE
> > TNC. So this new packet is what's called "bit regeneration".
>
> Just to distinguish the above from a digipeater:
>
> We're not waiting for the entire packet to arrive before we start
> repeating it. it. In the case of the TAPR bit-regenerating
> modification for their 9600 Baud modem, bits are transmitted about 10
> bit-times after they are received (I forgot the exact number). Part of
> the delay is necessary to fully decode bits and recover the bit-clock,
> and part is propogation delay through some registered logic.

        OK I agree that the new TAPR modem WHICH NO-ONE CAN GET!!! will
have this nice feature. The CURRENT available 9600 baud modems DO NOT
have this feature. I contend that usage has the digipeater I discuss
called bit regeneration.

>
> The advantage here is that analog phenomena such as noise and "twist"
> are not repeated - only a nice clean newly-modulated signal.

        Yes this is critical at 9600 baud.

> While we're talking about full-duplex repeaters, I'd like to point out
> that we can do better collison-detect using full-duplex systems than
> our current half-duplex ones. A station need only listen for its
> transmitted signal coming back from the repeater. If the signal coming

        Wow! Everyone has to buy a new tnc for this idea to work, and
every user must have a DUPLEXER!! At 2 meters these thinghs cost about
$1000.00.....

> back from the repeater doesn't match what it transmitted a few
> bit-times ago (accounting for delays in the repeater, the local modem,
> and the speed of light), we've collided with another station and should
> stop transmitting immediately. We don't have to wait for the end of a

        Come on Bruce! If you find your transmitting while someone else
is assures there is a collision and Neither packet will get through. So
when the bad packet is finished there will be a frenzy of stations
sending NAC and trying to get the repeater to listen to it.

> packet to detect a collision, and we know we've collided so we can
> immediately queue the packet for retransmission rather than waiting for
> a time-out.
>
>   Bruce Perens AB6YM
>
>

        Bruce get back into the real world. Maybe if Bill Gates decides
to fund a packet system in his home town will you see a system like you
want.

        What we have is the DCD system on the tnc-2 which is not used
much in a simplex network but works real well with a full duplex
digipeater/bit regenerator. It is a REAL improvement in through-put and
has been widely used. Do you remember slot-time and persistance Bruce? It
does work.

-karl

7. Re: Bit Regeneration

From: Greg Jones <gjones@tenet.edu>
Date: Sun, 3 Jul 1994 05:26:55 -0500 (CDT)
To: netsig@tcet.unt.edu
Message-ID: <199407031026.FAA17717@Kay-Abernathy.tenet.edu>
Rendered body type: text/plain

According to TAPR Network Special Interest Group:
> From: Klarsen <klarsen@acca.nmsu.edu>
> Date: Sun, 3 Jul 1994 03:17:37 -0600 (MDT)

>
>   OK I agree that the new TAPR modem WHICH NO-ONE CAN GET!!! will
> have this nice feature. The CURRENT available 9600 baud modems DO NOT
> have this feature. I contend that usage has the digipeater I discuss
> called bit regeneration.

The TAPR 9600 baud modems have been in stock for the last few weeks and we
are almost caught up on back orders. THANKS FOR YOUR POSITIVE SUPPORT IN
THIS NON-PROFIT VOLUNTEER ORGANIZATION.

Don't forget now -- the order form says 6-8 weeks. TAPR use to keep
everything in constant inventory - this only keeps massive amounts of
our cash tied up in inventory that somehow also has to be used to do new
projects...so either you get kits in 1 week, or we have money to do
things like the DSP-93 and other projects. Since the TNC-II OEM
contracts ran out a few years ago, we don't have major cash intake to
drop on R&D. TAPR has made a change in the kit area, so that we can
continue to work on new projects and thus keep kits in stock in batches
throughout the year. So - you can either have kit or R&D, but not both
this year at least.

However, availability is not the issue. Many of the folks that are
purchasing the modem are unable to deal with the radio issues involved
and the number of technical support questions point to that fact --
even with the strongly worded introductions. All you get from your
efforts is someone upset about not being able to get it fully
operational - even when you keep telling folks their chance of getting
their first unit operational by themself are low. They get the kit built,
but then the radio interface kills the project...all TAPR gets from it
efforts many a time is messages like this or on packet saying how awful
TAPR is and how bad we are doing things....well maybe it just been a
rough week for me - but I take this stuff pretty personally since I seem
to put in about 40+ hours a week on TAPR and like most efforts, get a
pat on the back maybe once in every two years.

The prime reason TAPR compliants are more visible now is becuase TAPR's
previous savior, Lyle Johnson, is off doing something he finds much more
fun than doing what he did for 10 years -- that of fixing many a unit
with his on hands. Technical support and user education will continue
to be an issue and it will not be fixed overnight.

Lucky for me -- things only get better :-) As with any change - I
expect that folks will leave TAPR and be upset at what happens to them
personally, but hey - this is amateur radio and TAPR is not a commerical
company (thank god). Folks are either really happy or unhappy...you
can't have it either way, but all I look for is folks willing to
complain constructively or willing to kick in and volunteer their 10-12
hours a week like many others do.

I'll get off the soap box and hit the sack.
(Yes it is 6am - normal quiting time for my TAPR activity)

Greg

8. Re: Bit Regeneration

From: bm@hydra.carleton.CA (Barry McLarnon VE3JF)
Date: Sun, 3 Jul 94 9:50:37 WET DST
To: netsig@tcet.unt.edu
Message-ID: <9407031350.AA07366@hydra.carleton.CA>
Rendered body type: text/plain

Klarsen <klarsen@acca.nmsu.edu> writes:
> > > The tnc-2 listens for a packet to it. When it gets a packet for
> > > relay it turns on the repeater transmitter and sends a packet MADE IN THE
> > > TNC. So this new packet is what's called "bit regeneration".
> >
> > Just to distinguish the above from a digipeater:
> >
> > We're not waiting for the entire packet to arrive before we start
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> > modification for their 9600 Baud modem, bits are transmitted about 10
> > bit-times after they are received (I forgot the exact number). Part of
> > the delay is necessary to fully decode bits and recover the bit-clock,
> > and part is propogation delay through some registered logic.
>
>   OK I agree that the new TAPR modem WHICH NO-ONE CAN GET!!! will
> have this nice feature. The CURRENT available 9600 baud modems DO NOT
> have this feature. I contend that usage has the digipeater I discuss
> called bit regeneration.

Oh crap, Karl... I can't listen to your misinformation any longer. A bit
regenerator is exactly as Bruce described it: it regenerates the incoming
signal on a bit-by-bit basis, with a minimum of delay.

Current availability problems aside, the TAPR modem has had this feature
since its introduction a couple of years ago. My 56 kb bit regen design
is available by anonymous ftp from hydra.carleton.ca... it could probably
be adapted for use with non-TAPR 9600 bps modems without much difficulty.
Bit regeneration at 1200 bps is trivial (no FIFO needed).

> > The advantage here is that analog phenomena such as noise and "twist"
> > are not repeated - only a nice clean newly-modulated signal.
>
>   Yes this is critical at 9600 baud.
>
> > While we're talking about full-duplex repeaters, I'd like to point out
> > that we can do better collison-detect using full-duplex systems than
> > our current half-duplex ones. A station need only listen for its
> > transmitted signal coming back from the repeater. If the signal coming
>
>   Wow! Everyone has to buy a new tnc for this idea to work, and
> every user must have a DUPLEXER!! At 2 meters these thinghs cost about
> $1000.00.....

You could always go cross-band... that's what we did with our 56 kb repeater.
Repeater users now need a dual-band antenna and a separate receiver... on
the other hand, this configuration makes a lot of turnaround time problems
go away.

> > back from the repeater doesn't match what it transmitted a few
> > bit-times ago (accounting for delays in the repeater, the local modem,
> > and the speed of light), we've collided with another station and should
> > stop transmitting immediately. We don't have to wait for the end of a
>
>   Come on Bruce! If you find your transmitting while someone else
> is assures there is a collision and Neither packet will get through. So

Not necessarily true in an rf environment... one of the transmitting stations
may be strong enough to capture the repeater's receiver.

> when the bad packet is finished there will be a frenzy of stations
> sending NAC and trying to get the repeater to listen to it.

You are unclear on the concept. And what's a NAC, anyway?

> > packet to detect a collision, and we know we've collided so we can
> > immediately queue the packet for retransmission rather than waiting for
> > a time-out.
> >
> >   Bruce Perens AB6YM
> >
> >
>   Bruce get back into the real world. Maybe if Bill Gates decides
> to fund a packet system in his home town will you see a system like you
> want.

The 'real world' stinks. Isn't that what this SIG is about? Do all new
ideas need to be subjected to the lowest common denominator test ('will all
of the users support this?')? If so, the packet network will stay mired in
the netwrong/pbbs dark ages. When we built our 56 kb LAN here, we didn't
wait for the approval of the masses, we did it for the few that wanted
better facilities and were willing to contribute to them. When your endeavour
becomes successful, others will gravitate towards it... for those that don't,
who cares? Let 'em stay with what they've got.

If you're dedicated to maintaining the status quo, then find another forum...
the pbbs network springs readily to mind. :-)

Barry

--
  Barry McLarnon VE3JF/VA3TCP | Internet: bm@hydra.carleton.ca
  Ottawa Amateur Radio Club | AMPRnet: barry@va3tcp.ampr.org
  Packet Working Group | FreeNet: aa187@freenet.carleton.ca

9. Re: Bit Regeneration

From: Jack Taylor <n7oo@huachuca-emh8.army.mil>
Date: Sun, 3 Jul 94 9:14:22 MST
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <9407031615.AA184998@tcet.unt.edu>
Rendered body type: text/plain

On the general topic of kit assembly, my experience (which includes the original issue of the tapr 9600 baud mode) is that assistance calls are inversely proportional to the quality of documentation. Would suggest ANY kit include a comprehensive diagnostic/trouble-shooting guide indicating voltages and waveforms for the circuit.

With the availability of video cameras, it would be fairly simple to shoot the process of the initial kit being constructed with comments by the design engineer on parts placement and technique. One could even show waveforms and voltage levels on the video during the checkout phase of the assembled kit. It may turn out that videos would be cheaper to produce then extensive paper documentation.

73 de Jack

10. Re: Bit Regeneration

From: Bdale Garbee <bdale@hipshack.gag.com>
Date: Sun, 3 Jul 1994 15:07:27 -0600
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <199407032107.PAA23835@hipshack.gag.com>
Rendered body type: text/plain

Hello everyone. I finally made time to add myself to the list... nothing like jumping into the middle of a discussion! :-)

: Would suggest
: ANY kit include a comprehensive diagnostic/trouble-shooting guide
: indicating voltages and waveforms for the circuit.

Since I've never been involved in designing a TAPR kit, but have built a few of them and a few other kits, I think I am pretty impartial in saying I think that TAPR docs are pretty good.

: With the availability of video cameras, it would be fairly simple to
: shoot the process of the initial kit being constructed with comments by
: the design engineer on parts placement and technique.

Good idea.

Are you volunteering? Remember, TAPR R&D and kit development is an all-volunteer operation. Good ideas remain just that unless someone volunteers to do something about them.

73 - Bdale, N3EUA

11. Re: Bit Regeneration

From: bruce@pixar.com (Bruce Perens)
Date: Sun, 3 Jul 94 14:35 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <m0qKZCM-0006BnC@mongo.pixar.com>
Rendered body type: text/plain

>From: Klarsen <klarsen@acca.nmsu.edu>
> OK I agree that the new TAPR modem WHICH NO-ONE CAN GET!!! will
> have this nice feature.

The "old one" has it too. It's a PAL that goes in a normally-unpopulated socket. TAPR wanted $5 for the PAL and $10 for the stand-alone clock about a year ago when I bought the modem.

> Wow! Everyone has to buy a new tnc for this idea to work, and
> every user must have a DUPLEXER!! At 2 meters these thinghs cost about
> $1000.00.....

It's optional to detect collisions quickly - if you do it the old way it still works with the repeater, just not as fast.

For TNC-2 it would probably just be a software change, not a new TNC. Cross-band operation would eliminate the duplexer - even my HT does full-duplex cross band. So perhaps you do it without added cost.

> Come on Bruce! If you find your transmitting while someone else
> is assures there is a collision and Neither packet will get through. So

> when the bad packet is finished there will be a frenzy of stations
> sending NAC and trying to get the repeater to listen to it.
Not necessary. Receiving stations don't do anything because they haven't
decoded a valid packet. The transmitting stations have the option of dropping
off the air before the packet is completed or sending a "jam sequence" of
30-40 deliberately-invalid bits so that the other doubling station will be
sure to pick up that there has been a double. The point is that you don't
have to transmit the whole packet if you know you're doubling.
There is no need for NAK because the transmitting stations know that they
did not decode their own packets correctly.
Look up the way this is done on Ethernet - it's old technology.

> Bruce get back into the real world. Maybe if Bill Gates decides
> to fund a packet system in his home town will you see a system like you
> want.
Full-duplex bit-regenerating packet repeaters exist in lots of cities
today. The collision detect is something an individual station does,
and you can do fast collision detect or not without the rest of the system
having to know.

> What we have is the DCD system on the tnc-2 which is not used
> much in a simplex network but works real well with a full duplex
> digipeater/bit regenerator. It is a REAL improvement in through-put and
> has been widely used. Do you remember slot-time and persistance Bruce? It
> does work.
Sure I know packet basics - please give me that much credit.
You can do what I described with a common cross-band radio and some
software. No extra hardware expense is necessary. So why not try?

        Bruce

12. Re: Bit Regeneration

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Sun, 3 Jul 1994 16:07:10 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9407031520.C393-0100000@kazak>
Rendered body type: text/plain

On Sun, 3 Jul 1994, TAPR Network Special Interest Group wrote:

> From: bm@hydra.carleton.CA (Barry McLarnon VE3JF)
> Subject: Re: Bit Regeneration
> To: netsig@tcet.unt.edu
> Date: Sun, 3 Jul 94 9:50:37 WET DST
>
> Oh crap, Karl... I can't listen to your misinformation any longer. A bit
> regenerator is exactly as Bruce described it: it regenerates the incoming
> signal on a bit-by-bit basis, with a minimum of delay.

        Oh crap, Barry... I can't listen to your misinformation any
longer either! What does it matter that a voice repeater, an existing
device, can be made into a very useful packet device with a plain tnc-2?
>
> You could always go cross-band... that's what we did with our 56 kb repeater.
> Repeater users now need a dual-band antenna and a separate receiver... on
> the other hand, this configuration makes a lot of turnaround time problems
> go away.

        That's a great idea Barry. If we could afford the 2 radios and
dual band antennas it will work fine. That's a lot cheaper than duplexers
below 420 MHz.

        I have a question Barry: How many users does your 56kb repeater
have this week?
>
> The 'real world' stinks. Isn't that what this SIG is about? Do all new
> ideas need to be subjected to the lowest common denominator test ('will all
> of the users support this?')? If so, the packet network will stay mired in

        Barry, you and some others like to discuss things that are
tecknically incorrect and logically not sound. I like to look at things
that can be done in 2-5 years. I feel it is well to take you to task on
the validity of what you propose. I fear many may believe what you claim...

> the netwrong/pbbs dark ages. When we built our 56 kb LAN here, we didn't
> wait for the approval of the masses, we did it for the few that wanted
> better facilities and were willing to contribute to them. When your endeavour
> becomes successful, others will gravitate towards it... for those that don't,

> who cares? Let 'em stay with what they've got.

        When Roy Gould n5rg and I put up the current 9600 baud network
here it was funded by us and is used by many now. But most users enter
the 9600 baud world from a 1200 baud port. I suspect you and a few others
put up all the money for your 56k network. Am I right?

> If you're dedicated to maintaining the status quo, then find another forum...
> the pbbs network springs readily to mind. :-)

        Thank you for your advice on which forum I should use. But I will
use my own judgement on which to use and you may keep your suggestions to
yourself Barry.

        And I really do whant to know how many users are on your 56kb net.

- de karl k5di

13. Re: Bit Regeneration

From: bruce@pixar.com (Bruce Perens)
Date: Sun, 3 Jul 94 17:29 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <m0qKbuC-0006BnC@mongo.pixar.com>
Rendered body type: text/plain

> And I really do whant to know how many users are on your 56kb net.

Probably not many, but why does that matter? The ones on 56kb and
faster are the innovators. The rest of us are followers.
Eventually, their technology will trickle down to us, as it has
with 1200 and 9600 packet. We should not damn them for their better
vision, or for their having the committment to be the first to build
their dream.

I think the primary digital mode in U.S. Amateur Radio may still be
hand-keyed telegraphy bounced off the ionosphere. At the same time a
few people use digital modes via satellite. It's going to take some
time for the few to educate the many.

        Bruce Perens AB6YM

14. Re: Bit Regeneration

From: Greg Jones <gjones@tenet.edu>
Date: Sun, 3 Jul 1994 20:06:58 -0500 (CDT)
To: netsig@tcet.unt.edu
Message-ID: <199407040106.UAA28534@Kay-Abernathy.tenet.edu>
Rendered body type: text/plain

According to TAPR Network Special Interest Group:
> From: bruce@pixar.com (Bruce Perens)
> Date: Sun, 3 Jul 94 14:35 PDT
>
> The "old one" has it too. It's a PAL that goes in a normally-unpopulated
> socket. TAPR wanted $5 for the PAL and $10 for the stand-alone clock
> about a year ago when I bought the modem.

Yes the upgrade is $15 ($10 bit-regen option and $5.00 clock option)
Modem is $80. So - $95 you have your bit-regen site, less $$ over a $110+
TNC (1200 type), even more $$ if you are getting one with a 9600 baud modem
in it.

I believe this entire discussion started over the difference between
bit-regen and digipeating (for short). The difference between
retransmitting the packet with a small delay or waiting till the packet has
been totally received and then retransmitted.

There are difference between the methods that lends to each being used in
different applicatons. But they are different.

Greg

15. Re: Bit Regeneration

From: makinc@hhcs.gov.au (Carl Makin)
Date: Mon, 4 Jul 1994 11:41:24 +1000
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <199407040141.AA11666@sserve.cc.adfa.oz.au>
Rendered body type: text/plain

At 12:38 PM 2/7/94 -0500, <net_sig@tcet.unt.edu> wrote:

>   The tnc-2 listens for a packet to it. When it gets a packet for
> relay it turns on the repeater transmitter and sends a packet MADE IN THE
> TNC. So this new packet is what's called "bit regeneration".

>   Yes "bit regeneration" is a packet buzz word that is designed to
> confuse a very simple concept. We don't need to be more confused than we
> already are!

Actually the majority of packet people I talk to would call that "digipeating".

The common definition of "Bit Regeneration" is where a repeater is setup
with a modem between the receiver and the transmitter. The modem decodes
the incoming data and then re-encodes it before transmitting. Like a voice
repeater the signal is retransmitted at virtually the same time it is
received (There may be a small delay of a few bit positions). The repeater
is NOT usable for analogue voice. This gives some *major* advantages over
digipeating.

We're working on getting a 4800 baud one operational here.

Carl.

--
Carl Makin (VK1KCM)   "Speaking for myself only!" '+61 6 289 8443'
makinc@hhcs.gov.au (Internet) / vk1kcm@vk1kcm.act.aus.oc (Packet Radio)
'The best book on programming for the layman is "Alice in Wonderland";
 but that's because it's the best book on anything for the layman.'

16. Re: Bit Regeneration

From: colla@burzaco.satlink.net (Pedro E. Colla)
Date: Sun, 03 Jul 1994 19:35:00 ARG
To: netsig@tcet.unt.edu
Message-ID: <199407040203.AA17449@hustle.rahul.net>
Rendered body type: text/plain

E-mail from : Pedro E. Colla can be reached as : colla@burzaco.satlink.net

net_sig@tcet.unt.edu (TAPR Network Special Interest Group) writes:

>   The tnc-2 listens for a packet to it. When it gets a packet for
>relay it turns on the repeater transmitter and sends a packet MADE IN THE
>TNC. So this new packet is what's called "bit regeneration".
>
>   Yes "bit regeneration" is a packet buzz word that is designed to
>confuse a very simple concept. We don't need to be more confused than we
>already are!

Well, that's actually a digipeater, the highest in town, the powerful around
but a pure and simple digi from the AX25 standpoint.

Let's assume you bounce your packets on a normal FM repeater; of course it
would work, but any noise on the signal would be also repeated with some
also added by the repeating process.

With signals marginal enough the other end will receive a strong signal with
a modulation corrupted by noise.

Now, let's put a modem on the repeater audio chain and get a nice and filtered
tones instead of the receiving bandpass; then demodulate them into digital
1's and 0's.

If you use the outcoming stream to feed another modem the tones would be
clean and fresh from the repeater and a sibling of the incoming signal but
noise free.

If the noise imbedded into the tones isn't high enough to mix things up
a new tone is generated completely free of noise (then the name of
bit regeneration).

Then, no AX25 interpretation took place at all. Hope it clarifies the point.

Regards.
Pedro.

PS: Still a very simple concept obscured within a buzzword!

Pedro E. Colla - (1846) Adrogue - Buenos Aires - Argentina   [GF05SE]
Packet: LU1BUV@LU1BUV.#ADR.BA.ARG.SOAM   Home: colla@burzaco.satlink.net

17. Re: Bit Regeneration

From: bm@hydra.carleton.CA (Barry McLarnon VE3JF)
Date: Sun, 3 Jul 94 22:58:48 WET DST
To: netsig@tcet.unt.edu
Message-ID: <9407040258.AA08648@hydra.carleton.CA>
Rendered body type: text/plain

> From: Klarsen <klarsen@acca.nmsu.edu>
>
>   Oh crap, Barry... I can't listen to your misinformation any
> longer either! What does it matter that a voice repeater, an existing
> device, can be made into a very useful packet device with a plain tnc-2?

Right... when in doubt, throw in a non sequitur.

>   I have a question Barry: How many users does your 56kb repeater
> have this week?

Oh, I'd guess 150 or so. Our 56kb LAN is not a private club, it's a backbone
which carries virtually all of the local traffic. The 56kb stations provide
links to other nodes and/or local user access ports. The 56kb repeater is
tied directly to our hub switch. So, what's your point?

>   Barry, you and some others like to discuss things that are
> tecknically incorrect and logically not sound. I like to look at things
> that can be done in 2-5 years. I feel it is well to take you to task on
> the validity of what you propose. I fear many may believe what you claim...

Geez, I gotta get my Universal Translator plugged in here... what *are* you
talking about? What proposal? What claims?

>   When Roy Gould n5rg and I put up the current 9600 baud network
> here it was funded by us and is used by many now. But most users enter
> the 9600 baud world from a 1200 baud port. I suspect you and a few others
> put up all the money for your 56k network. Am I right?

Sure... a handful of people and some creative fundraising. Ain't it the
same everywhere? Again, what's your point?

> > If you're dedicated to maintaining the status quo, then find another forum...
> > the pbbs network springs readily to mind. :-)
>
>   Thank you for your advice on which forum I should use. But I will
> use my own judgement on which to use and you may keep your suggestions to
> yourself Barry.

Gee Karl, I think you missed the smiley there... but I'll sure do that in
the future, uh huh.

>   And I really do whant to know how many users are on your 56kb net.

You got your answer: relatively few people have 56kb, but LOTS of people
benefit from it. Hey, it carries all the traffic on the converse system
hub too... users all over the world use our 56kb net, and most of them
don't even know it... :-)

Barry

--
  Barry McLarnon VE3JF/VA3TCP | Internet: bm@hydra.carleton.ca
  Ottawa Amateur Radio Club | AMPRnet: barry@va3tcp.ampr.org
  Packet Working Group | FreeNet: aa187@freenet.carleton.ca

18. Re: Bit Regeneration

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Mon, 4 Jul 1994 06:06:06 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9407030806.A8858-0100000@kazak>
Rendered body type: text/plain

On Sun, 3 Jul 1994, TAPR Network Special Interest Group wrote:

> From: Greg Jones <gjones@tenet.edu>
> Subject: Re: Bit Regeneration
> To: netsig@tcet.unt.edu
> Date: Sun, 3 Jul 1994 05:26:55 -0500 (CDT)

>
> According to TAPR Network Special Interest Group:
> > From: Klarsen <klarsen@acca.nmsu.edu>
> > Date: Sun, 3 Jul 1994 03:17:37 -0600 (MDT)
> >
> >   OK I agree that the new TAPR modem WHICH NO-ONE CAN GET!!! will
>
> The TAPR 9600 baud modems have been in stock for the last few weeks and we
> are almost caught up on back orders. THANKS FOR YOUR POSITIVE SUPPORT IN
> THIS NON-PROFIT VOLUNTEER ORGANIZATION.

        I and others do forget Greg.

>
> Don't forget now -- the order form says 6-8 weeks. TAPR use to keep
> everything in constant inventory - this only keeps massive amounts of
> our cash tied up in inventory that somehow also has to be used to do new
> projects...so either you get kits in 1 week, or we have money to do

        This is a issue you as a group must work out but does keeping a
few like 50 modem kits tie up so much money? At the current price it
isn't a fortune and they will sell faster.

        How about making a profit? Raise the price a little so the sales
do contribute to TAPR.

> things like the DSP-93 and other projects. Since the TNC-II OEM
> contracts ran out a few years ago, we don't have major cash intake to
> drop on R&D. TAPR has made a change in the kit area, so that we can
> continue to work on new projects and thus keep kits in stock in batches
> throughout the year. So - you can either have kit or R&D, but not both
> this year at least.

        Sounds to me like the R&D is killing the goose that layed the
Golden Egg...

>
> However, availability is not the issue. Many of the folks that are
> purchasing the modem are unable to deal with the radio issues involved
> and the number of technical support questions point to that fact --
> even with the strongly worded introductions. All you get from your
> efforts is someone upset about not being able to get it fully
> operational - even when you keep telling folks their chance of getting
> their first unit operational by themself are low. They get the kit built,

        Well telling us that it won't work is not very good. What you
should say Greg is that you need 2 modems! I agree it's hard to get
started at 9600 baud. But once you get a well done node up it gets
simpler. And you do need a proper radio. I have been using the TEKK radio
and it is fine at 9600 baud.

> but then the radio interface kills the project...all TAPR gets from it
> efforts many a time is messages like this or on packet saying how awful
> TAPR is and how bad we are doing things....well maybe it just been a
> rough week for me - but I take this stuff pretty personally since I seem
> to put in about 40+ hours a week on TAPR and like most efforts, get a
> pat on the back maybe once in every two years.

        Pat Pat Pat

> The prime reason TAPR compliants are more visible now is becuase TAPR's
> previous savior, Lyle Johnson, is off doing something he finds much more
> fun than doing what he did for 10 years -- that of fixing many a unit
> with his on hands. Technical support and user education will continue
> to be an issue and it will not be fixed overnight.

        Jack Taylor n7oo suggests that you include a video tape with the
harder kits showing how components fit and tricks that are hard to write
down but easy to show. It soubds good to me.

> Lucky for me -- things only get better :-) As with any change - I
> expect that folks will leave TAPR and be upset at what happens to them
> personally, but hey - this is amateur radio and TAPR is not a commerical
> company (thank god). Folks are either really happy or unhappy...you
> can't have it either way, but all I look for is folks willing to

> complain constructively or willing to kick in and volunteer their 10-12
> hours a week like many others do.

        I'm old at 59 and have a job that requires a lot of travel. I
have a wife and children that take time. I am not as dynamic as you are
Greg. And I'm not president of anything.

> I'll get off the soap box and hit the sack.
> (Yes it is 6am - normal quiting time for my TAPR activity)
>
> Greg
>
>
        We overlap in time...I start at 5am...

-karl

19. Re: Bit Regeneration

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Mon, 4 Jul 1994 06:36:07 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9407040649.D14859-0100000@kazak>
Rendered body type: text/plain

On Sun, 3 Jul 1994, TAPR Network Special Interest Group wrote:

> From: makinc@hhcs.gov.au (Carl Makin)
> Subject: Re: Bit Regeneration
> To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
> Date: Mon, 4 Jul 1994 11:41:24 +1000
>
> At 12:38 PM 2/7/94 -0500, <net_sig@tcet.unt.edu> wrote:
>
> >   The tnc-2 listens for a packet to it. When it gets a packet for
> > relay it turns on the repeater transmitter and sends a packet MADE IN THE
> > TNC. So this new packet is what's called "bit regeneration".
>
> >   Yes "bit regeneration" is a packet buzz word that is designed to
> > confuse a very simple concept. We don't need to be more confused than we
> > already are!
>
> Actually the majority of packet people I talk to would call that "digipeating".

        It is if it's all on the same frequency...

>
> The common definition of "Bit Regeneration" is where a repeater is setup
> with a modem between the receiver and the transmitter. The modem decodes
> the incoming data and then re-encodes it before transmitting. Like a voice
> repeater the signal is retransmitted at virtually the same time it is
> received (There may be a small delay of a few bit positions). The repeater
> is NOT usable for analogue voice. This gives some *major* advantages over
> digipeating.
>
> We're working on getting a 4800 baud one operational here.
>
>
> Carl.

        Great Carl! Keep us posted on how you do it and how it works! I
suggest that a tnc-2 has a modem and all you need. The modem is attached
to the receiver. The transmitter is keyed by the tnc and sends out a
packet AFTER it gets a whole good packet decoded. How much slower is this
than one that waits at least the "flag times" to know that a REAL packet
is comming? And this repeater won't let voice be repeated either...hi

        I would like to run a test and see how much faster the bit wise
regeneration is...

-karl

20. Re: Bit Regeneration

From: "RONALD D. HACKETT" <RDHACKE@delphi.com>
Date: Mon, 04 Jul 1994 10:30:13 -0400 (EDT)
To: netsig@tcet.unt.edu
Cc: bruce@pixar.com
Message-ID: <01HEAZVXEBPU9ANTK6@delphi.com>

Rendered body type: text/plain

> The advantaage here is that analog phenomena such as noise and "twist"
> are not repeated

What is "twist"? I couldn't find it in any of my handbooks.

****
Ronald D. Hackett Internet: r.hackett@ieee.org
The Packet Rat BBS Packet Radio: N8NAA@K3WGF.#SAT.TX.USA.NOAM
San Antonio, Texas, USA AMPRnet: n8naa@n8naa.ampr.org
Phone: (210) 494-2849 Fidonet: 1:387/340
****

21. Re: Bit Regeneration

From: bruce@pixar.com (Bruce Perens)
Date: Mon, 4 Jul 94 11:20 PDT
To: netsig@tcet.unt.edu, "RONALD D. HACKETT" <RDHACKE@delphi.com>
Cc: bruce@pixar.com
Message-ID: <m0qKsd8-0006BnC@mongo.pixar.com>
Rendered body type: text/plain

Bruce:
> The advantaage here is that analog phenomena such as noise and "twist"
> are not repeated

>From: "RONALD D. HACKETT" <RDHACKE@delphi.com>
> What is "twist"? I couldn't find it in any of my handbooks.

"Twist" is poor equalization such that some frequencies in the audio
passband have a different level than other frequencies. This is a
problem for 1200-Baud AFSK systems, I don't know how bad it is for
9600-Baud direct FSK. A bit-regenerator would not pass this on.
Neither would a digipeater.

Bruce Perens AB6YM

22. split the list?

From: bruce@pixar.com (Bruce Perens)
Date: Mon, 4 Jul 94 11:32 PDT
To: netsig@tcet.unt.edu
Message-ID: <m0qKsoP-0006BnC@mongo.pixar.com>
Rendered body type: text/plain

Perhaps we should split the NETSIG list into one for high-end packet
development and one for the low end. I want to hear what the pioneers
have to say. I'd rather not see them driven off by people who chide them
for having blue-sky vision.

Thanks

Bruce Perens AB6YM

23. Re: Bit Regeneration

From: kb7uv@panix.com (Andrew Funk)
Date: Mon, 4 Jul 1994 15:44:45 -0400
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <199407041944.AA10151@panix.com>
Rendered body type: text/plain

>
> Wow! Everyone has to buy a new tnc for this idea to work, and
>every user must have a DUPLEXER!! At 2 meters these thinghs cost about
>$1000.00.....

For truly advanced collision detection, yes, but full dux repeaters with bit
regenerators do work well with existing equipment.

Does every voice repeater user need a duplexer? No! Neither with a packet
repeater, bit regenerator or not.

BTW, there seem to be two schools of thought regarding what a bit
regenerator is, as used on Amateur packet radio. Some say it's a device
that regenerates the data on a bit-by-bit basis, not waiting for an entire
frame to have been received. Others use the term to indicate just that the
data is re-encoded (bits are regenerated) at the repeater, but not
necessarily on a bit-by-bit basis.

The Xanthus bit regenerator (by Tom Moulton, W2VY -- the guy who does the
ROSE X.25 Packet Switch) as I recall waits until a valid frame is received
before regenerating it, but it also transmits flags as soon as it begins to
receive data. This provides something for listening TNCs to "hear" so
they'll keep quiet and not collide with the TNC that's capured the repeater.

73, Andy
--
Andrew Funk, KB7UV | Insert
ENG Editor -- Microwave Control | Commercial
WCBS-TV Channel 2 News, New York | Here

24. Re: split the

From: Rob Mayfield <mayfield@guest.adelaide.edu.au>
Date: Tue, 5 Jul 1994 10:59:40 +0930 (CST)
To: netsig@tcet.unt.edu
Message-ID: <9407050129.AA27289@wattle.itd.adelaide.edu.au>
Rendered body type: text/plain

*** In reply to mail from TAPR Network Special Interest Group, ...:
> Perhaps we should split the NETSIG list into one for high-end packet
> development and one for the low end. I want to hear what the pioneers
> have to say. I'd rather not see them driven off by people who chide them
> for having blue-sky vision.
>
>   Thanks
>
>   Bruce Perens AB6YM

Seconded.

--
rob mayfield senior technical analyst, australian submarine corporation p/l
vk5xxx / vk5zeu   (postal) po box 73, oaklands park, south australia, 5046
i-net mayfield@wattle.itd.adelaide.edu.au   or   xtasc@levels.unisa.edu.au
packet radio vk5xxx@vk5xxx.#adl.#sa.aus.oc   wire +6183487713w +618< ask >h

25. Re: Bit Regeneration

From: makinc@hhcs.gov.au (Carl Makin)
Date: Tue, 5 Jul 1994 11:48:52 +1000
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <199407050148.LAA03418@sserve.cc.adfa.oz.au>
Rendered body type: text/plain

At 12:56 PM 4/7/94 -0500, <net_sig@tcet.unt.edu> wrote:

>> Actually the majority of packet people I talk to would call that
>>"digipeating".

>   It is if it's all on the same frequency...

No. It's digipeating if it uses the AX.25 level repeating system. (8 hops etc)

>> The common definition of "Bit Regeneration" is where a repeater is setup
>> with a modem between the receiver and the transmitter. The modem decodes
..
..
>> We're working on getting a 4800 baud one operational here.

>   Great Carl! Keep us posted on how you do it and how it works! I
> suggest that a tnc-2 has a modem and all you need. The modem is attached

Actually to do bit regeneration, all you need is the modem.

>   I would like to run a test and see how much faster the bit wise
> regeneration is...

Bit regeneration will be just under twice as fast.

Lets take a look at how long things will take.

Say it takes a time period "x" to transmit a frame. Having a "repeater"
receive and decode the whole frame before retransmitting it means that the
destination station of the frame must wait 2 times "x" for the frame.
If the frame is retransmitted by the repeater with only a short delay (of a
few bit positions for the preamble) Then the frame is being received by
the destination station *before* the frame has finished being sent from the
originating station. Throughput on the channel will come *very* close to

the throughput experienced if all stations were in the same room.

A bit regenerative repeater has other benefits as well.

All stations on a frequency can "effectively" hear each other so that there
is no hidden transmitter problem.

The retransmitted signal has been cleaned up (by passing it through the modem).
This also means that as long as you can get into and receive the repeater
then you can communicate with *everyone* on frequency. (Usefull if your
radio is a little off frequency or your modem isn't quite up to scratch.)

The repeater is NOT tied to AX.25. You can pass *anything* over it.

Hmmmm... the above may be a little complex.

Karl, think of it this way.

Imagine your favourite voice repeater didn't immediately retransmit the
signal it received. Imagine that it recorded the signal and then when the
guy transmitting dropped the key it then retransmitted what they said.
However while it was recording it didn't key up the transmitter so that you
had NO way of knowing that it was recording.

Now that is going to slow down the ragchew a bit won't it! You'll have
collisions as multiple people try to get their word in and YOU WON'T KNOW
UNTIL THE SIGNAL IS RETRANSMITTED and then you have to wait until the
retransmission ends before you and the three other people try again!

That is EXACTLY how a digipeater (or the system you want us to use) works.
This is EXACTLY how the vast majority of nodes in the world now operate.

A Bit regenerative repeater acts more like the voice repeater we all know.
It's fast and solves many of the problems of standard packet networks.
They should be the standard way to run packet, not the exception.

Carl.
(BTW we have some simplex voice repeaters around here. They can be very
hard to use properly. :-)

--
Carl Makin (VK1KCM)   "Speaking for myself only!" '+61 6 289 8443'
makinc@hhcs.gov.au (Internet) / vk1kcm@vk1kcm.act.aus.oc (Packet Radio)
'The best book on programming for the layman is "Alice in Wonderland";
 but that's because it's the best book on anything for the layman.'

26. Re: Bit Regeneration

From: Bdale Garbee <bdale@hipshack.gag.com>
Date: Mon, 4 Jul 1994 22:38:25 -0600
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <199407050438.WAA24506@hipshack.gag.com>
Rendered body type: text/plain

In article <9407050118.AA138359@tcet.unt.edu> you wrote:
: The Xanthus bit regenerator (by Tom Moulton, W2VY -- the guy who does the
: ROSE X.25 Packet Switch) as I recall waits until a valid frame is received
: before regenerating it, but it also transmits flags as soon as it begins to
: receive data. This provides something for listening TNCs to "hear" so
: they'll keep quiet and not collide with the TNC that's capured the repeater.

This makes little sense. It means you're throwing away the nearly 2X
reduction in channel occupancy that a real digital repeater offers over
a digipeater.

The fact that each packet only occupies the channel a few bit times (the
delay through the regenerator's fifo and analog delays) more than a single
transmission versus 2X when it must be received by a digipeater and then
resent on the same channel is one of the beauties of a digital repeater. With
no other operational advantage, this cancels the 2X increase in spectrum
occupancy of the repeater (a pair instead of a simplex freq). In most cases,
the CSMA reduction in collisions greatly overshadows this factor, of course,
but 2X is 2X.

73 - Bdale, N3EUA

27. Re: split the

From: djk@dirku.demon.co.uk (Dirk-Jan Koopman)
Date: Tue, 5 Jul 1994 11:43:59 +0200 (BST)
To: netsig@tcet.unt.edu
Message-ID: <m0qL7yq-0004g8C@dirku>
Rendered body type: text/plain

>
> From: bruce@pixar.com (Bruce Perens)
> Subject: split the list?
> To: netsig@tcet.unt.edu
> Date: Mon, 4 Jul 94 11:32 PDT
>
> Perhaps we should split the NETSIG list into one for high-end packet
> development and one for the low end. I want to hear what the pioneers
> have to say. I'd rather not see them driven off by people who chide them
> for having blue-sky vision.
>
>   Thanks

Thirded

Dirk G1TLH

28. Re: Bit Regeneration

From: ahgroff@dz12.cca.rockwell.com (A.H.Groff)
Date: Tue, 5 Jul 94 07:41:00 CDT
To: netsig@tcet.unt.edu
Message-ID: <9407051241.AA01620@dz12.cca.rockwell.com>
Rendered body type: text/plain

In the broad definition of "digipeating", one could include "bit regenetation",
but "bit regentation" has been around long before packet radio and digipeating.
  I remember using bit-regen on AF MARS HF RTTY circuits back about 1968.
  Having put on a 9600 baud bit-regen repeater earlier this year, I will have
to say that it solved a lot of problems.. The bigget one of which is the hidden
transmitter problem. (even whithout Bruces' full duplex collision detection)
  (now we start to do it all over again with 56 kb)

AL, K0VM

29. Re: Bit Regeneration

From: hprice@bektek.com (Harold Price)
Date: Tue, 05 Jul 1994 10:41:16 -0400
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <199407051441.KAA06536@telerama.lm.com>
Rendered body type: text/plain

At 12:33 PM 7/4/94 CDT, Klarsen <klarsen@acca.nmsu.edu> wrote:

>
>   Sounds to me like the R&D is killing the goose that layed the
>Golden Egg...

Eh? R&D is the goose!

Harold
NK6K

30. Re: Bit Regeneration

From: hprice@bektek.com (Harold Price)
Date: Tue, 05 Jul 1994 10:41:18 -0400
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <199407051441.KAA06539@telerama.lm.com>
Rendered body type: text/plain

Klarsen <klarsen@acca.nmsu.edu> wrote:

> The transmitter is keyed by the tnc and sends out a
>packet AFTER it gets a whole good packet decoded.

I don't think I saw the other good reason for a bit-regen rather than a
digipeater mentioned on this thread... you don't have to be sending AX.25.

>   I would like to run a test and see how much faster the bit wise
>regeneration is...

With long packets, and short keyup times, almost twice as fast (since the
channel only sees one copy of the packet rather than two).

Harold
NK6K

31. Re: Bit Regeneration

From: hprice@bektek.com (Harold Price)
Date: Tue, 05 Jul 1994 10:41:20 -0400
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <199407051441.KAA06542@telerama.lm.com>
Rendered body type: text/plain

At 01:16 PM 7/4/94 CDT, "RONALD D. HACKETT" wrote:

>What is "twist"?   I couldn't find it in any of my handbooks.

Twist is where the amplitude of one tone is reduced with respect to the
other tone as it passes through the audio chain.

Harold

32. Re: split the

From: Adrian Godwin <agodwin@acorn.co.uk>
Date: Tue, 05 Jul 1994 15:35:39 +0100
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <9407051435.AA27547@snark.acorn.co.uk>
Rendered body type: text/plain

>
> From: bruce@pixar.com (Bruce Perens)
> Subject: split the list?
> To: netsig@tcet.unt.edu
> Date: Mon, 4 Jul 94 11:32 PDT
>
> Perhaps we should split the NETSIG list into one for high-end packet
> development and one for the low end. I want to hear what the pioneers
> have to say. I'd rather not see them driven off by people who chide them
> for having blue-sky vision.
>
>   Thanks
>

I think I'd rather see more tolerance and cross-fertilization than
the creation of two camps. I wouldn't want to lose either of them.

This list was set up with the declared intention of not attempting
to take over from other mailing lists or newsgroups. TAPR was seen
as neutral ground with no preconceptions about members' parts in
protocol wars, and where previous arguments could pushed to one side.
While that can still occur on more than one TAPR-hosted list, I feel
that the more finely divided the subjects are, the greater will be
the overlap with other forums and the greater will be the chance of
creating yet another set of opposing camps.

If we can't discuss issues on a mailing list without insisting on a
single, coherent viewpoint, what chance have we got of building
networks ?

-adrian

33. Re: Bit Regeneration

From: mcdermot@eagle.aud.alcatel.com (Tom Mcdermott)
Date: Tue, 5 Jul 94 10:21:45 CDT
To: netsig@tcet.unt.edu
Message-ID: <9407051521.AA08475@eagle.aud.alcatel.com>
Rendered body type: text/plain

I did not save messages concerning 'twist', so I cannot attribute questions
to the appropriate party. One question that was asked was "how good does
the frequency response have to be at 9600 FSK?" or something to that effect.

My recommendation, based on alpha=0.6 filters, is that the frequency
response should be flat, within 1db, from 10 hz to 8000 hz. This is based
on the amount of eye closure that occurs with more significant response
deviations. This 'twist' should allaow individual links to operate with
minimal SNR penalty. The regenerator of course removes the 'twist', but it

doesn't remove any bit-errors associated with the reception of a twisted-
signal (name for a new musical group?).

Another point, the state-machine clock recovery circuit can produce a
significant amount of jitter on a received signal (especially when run at
16x). If this clock is used to send out the resultant bit-regeneratored
transmit signal (as undoubtly it is), then the regenerated-signal will
contain additional jitter. Now the second receiver, listening to this signal
will also use a state-machine clock recovery circuit, and it will add it's
own jitter to that of the regenerator, increasing the probability of a bit
error. How much depends on a number of factors, of course. So, a
recommendation is to use analog-type clock-jitter supression on the regenerator
or to use 64x state-machines on both the regenerator and the receiver.
Data? - I have no analytical data on this problem; it is well documented
in the commercial telecom literature, but the math is very difficult at
best -- it's a complex analytical problem.

34. Splitting NetSIG?

From: "Ackermann, John" <jra@lawdept.daytonoh.NCR.COM>
Date: Tue Jul 05 12:03 EDT 1994
To: 'NetSIG Mailing List' <netsig@tcet.unt.edu>
Message-ID: <2E19777F@wasp.daytonoh.ncr.com>
Rendered body type: text/plain

I dunno...

I can sympathise with everyone who's frustrated with the low S/N letely, but
I don't think splitting the group would solve the problem -- we're
fragmented enough in the ham community as it is! A split would just result
in <two> places for off-topic discussions to occur.

But the point is well taken: let's try to be a bit more technology-positive
here. There's plenty of room on NetSIG for disagreements about where
networking is or should be going, but it's wise to recognize that most of us
here <are> looking to improve things, and not just build more of the same.
 We have <not> reached packet nirvana. None of the tools we currently use
 -- hardware or software -- are perfect (or even very good...). Serious
network building pushes the envelope and pat answers that "X is the only
thing to use" should be viewed with suspicion.

Let's move on.

John (speaking for himself, not the management)

35. Bit Regeneration

From: arrl@BIX.com
Date: Tue, 05 Jul 1994 12:10:25 -0400 (EDT)
To: netsig@tcet.unt.edu
Message-ID: <9407051210.memo.16859@BIX.com>
Rendered body type: text/plain

A short while ago, K0VM commented:

>> Having put on a 9600 baud bit-regen repeater earlier this year,
>>I will have to say that it solved a lot of problems..
>>The bigget one of which is the hidden transmitter problem.

To which KY1T responds:

    Al, I wonder if you could give us a rundown (just a list would
be fine, unless you WANT to go into more detail) of the precise
gadgetry you're using for that repeater.

    I'd be interested in everything from the type of radios used
right down to the duplexers and modems, if you'd be so kind...

73

Luck Hurder, KY1T   KY1TLUCK@AOL.COM ARRL@BIX.COM
53 Broadview St.   "The Amateur Radio Service opens doors
Newington CT 06111   to the world for EVERYONE!"
----

36. Re: split the list?

From: jra1854@tntech.edu (Jeffrey Austen)
Date: Tue, 05 Jul 1994 12:01:08 -0600

To: netsig@tcet.unt.edu
Message-ID: <01HECHIS9ZJM95N0B5@tntech.edu>
Rendered body type: text/plain

>Perhaps we should split the NETSIG list

I've previously suggested that we need a list for discussion of hardware
and low-level protocol issues (basically levels 1 and 2 of the ISO/OSI
model). These issues really shouldn't be on NETSIG as the network builders
should be concerned with building networks, not the boxes with which to
build networks.

Jeff, k9ja

+-+
Jeffrey Austen | Tennessee Technological University
jra1854@tntech.edu | Box 5004
(615) 372-3485 | Cookeville Tennessee 38505   U.S.A.

37. Re: Bit Regeneration

From: bruce@pixar.com (Bruce Perens)
Date: Tue, 5 Jul 94 11:08 PDT
To: bruce@pixar.com,
        "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <m0qLEv8-0006HuC@mongo.pixar.com>
Rendered body type: text/plain

> From: mcdermot@eagle.aud.alcatel.com (Tom Mcdermott)

> My recommendation, based on alpha=0.6 filters, is that the frequency
> response should be flat, within 1db, from 10 hz to 8000 hz.

My stereo isn't that flat :-). That's a good reason to use bit
regeneration.

> Another point, the state-machine clock recovery circuit can produce a
> significant amount of jitter on a received signal (especially when run at
> 16x).

Please clarify - does this mean:

A. The modem will decode a bit incorrectly and pass on a correctly-clocked
   bit with an incorrect value.

B. The modem will pass on bits with a spurious variation in duty-cycle from
   bit to bit.

C. Something else.

If you would post a more detailed explanation of how the clock and the
sense of the bits are recovered, I'd appreciate it and I'm sure others
would. I haven't seen the PAL equations or flowcharts for the TAPR
modem, though I've seen software implementations of UARTs. With a 16x
clock, do we sample the slicer 16 times per bit-time, or less often? Do
we run a sort of logical PLL to keep our clock in phase for the
duration of a packet once we have recovered the clock of the first few
bits, or is clock recovery "free-running"? Could we improve on this
problem with a more sophisticated algorithm? Lots of microcontrollers
can sample a bit at 614 KHz (64x clock) and have room for lots of other
work, so can we improve on this with a software implementation?

        Thanks

        Bruce Perens AB6YM

38. Re: The G8BPQ Packet Switch

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Tue, 5 Jul 1994 13:30:08 -0600 (MDT)
To: Everett F Batey <efb@suned1.Nswses.Navy.Mil>
Cc: Sig Networking <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9407051307.A26726-0100000@kazak>
Rendered body type: text/plain

On Tue, 5 Jul 1994, Everett F Batey wrote:

>
> Karl .. Is there a version that will run in a window in MessyDos 6.2
> and WinDoze 3.1 .. ? Connect on demand ? over phone dialup .. maybe
> even with telebit modems ?

>
        Ev, I run dos 6.2 and doubledisk and windows 3.1 and have the bbs
software from f6fbb and jnos1.10D connected to the g8bpq switch which I
load as a TSR just prior to loading windows. The memaker program in dos
6.2 loads the switch into high memeory...

> Are PPP and SLIP bothj options on the serial ports ?

        No there are no SLIP or PPP built into this switch.

73, de karl k5di

39. Re: Bit Regeneration

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Tue, 5 Jul 1994 13:40:40 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9407051347.B26726-0100000@kazak>
Rendered body type: text/plain

On Tue, 5 Jul 1994, TAPR Network Special Interest Group wrote:

> From: hprice@bektek.com (Harold Price)
> Subject: Re: Bit Regeneration
> To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
> Date: Tue, 05 Jul 1994 10:41:18 -0400
>
> Klarsen <klarsen@acca.nmsu.edu> wrote:
>
> > The transmitter is keyed by the tnc and sends out a
> >packet AFTER it gets a whole good packet decoded.
>
> I don't think I saw the other good reason for a bit-regen rather than a
> digipeater mentioned on this thread... you don't have to be sending AX.25.
>
> >   I would like to run a test and see how much faster the bit wise
> >regeneration is...
>
> With long packets, and short keyup times, almost twice as fast (since the
> channel only sees one copy of the packet rather than two).
>
> Harold
> NK6K
        Just a thought Harold, with my system doesn't the tnc get another
packet from the reciever on a duplex system while it is sending one out
over the transmitt frequency? Since we use a hardware nrz packet forming
device it would seem at least possible to be receiving a packet at the
same time it is sending one.
        In fact that is how it WILL work! So my "digipeater" with
seperate receive and transmitt frequency's will run almost as fast as a
bit-wise system.

        Or do we need 2 tnc-s? I am not sure the tnc-2 can send a packet
the same time one is coming in. Anybody know?

-karl k5di

40. Re: Splitting

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Tue, 5 Jul 1994 13:52:28 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9407051348.C26726-0100000@kazak>
Rendered body type: text/plain

On Tue, 5 Jul 1994, TAPR Network Special Interest Group wrote:

> From: "Ackermann, John" <jra@lawdept.daytonoh.NCR.COM>
> Subject: Splitting NetSIG?
> To: 'NetSIG Mailing List' <netsig@tcet.unt.edu>
> Date: Tue Jul 05 12:03 EDT 1994
>
>
> I dunno...
>
> I can sympathise with everyone who's frustrated with the low S/N letely, but
> I don't think splitting the group would solve the problem -- we're
> fragmented enough in the ham community as it is! A split would just result

> in <two> places for off-topic discussions to occur.

Prey tell, who would be the judge that tells karl that he no longer may participate in this sig anymore? Should I pull out my papers proving I have a masters degree in EE?

>
> But the point is well taken: let's try to be a bit more technology-positive
> here. There's plenty of room on NetSIG for disagreements about where
> networking is or should be going, but it's wise to recognize that most of us
> here <are> looking to improve things, and not just build more of the same.

What about the some of us that would like to build a 56k network like Barry already has for 6 years? This MAY be packet nirvana and we are not wise enuf to see it.

> We have <not> reached packet nirvana. None of the tools we currently use
> -- hardware or software -- are perfect (or even very good...). Serious
> network building pushes the envelope and pat answers that "X is the only
> thing to use" should be viewed with suspicion.
>
> Let's move on.
>
> John (speaking for himself, not the management)
>
>
Karl speaking for karl. k5di

41. Implementation?

From: <orv@micom.com> (Orville Beach)
Date: Tue Jul 5 11:43:00 1994
To: <netsig@tcet.unt.edu>
Message-ID: <9407051854.AA29999@micom.com>
Rendered body type: text/plain

I'm a typical newgroup/listserver lurker. I pick up a lot from these groups, but rarely feel like I have anything worthwhile to contribute.

That's because I'm sort of a digital manifestation of the old school ham radio operator: "use whatcha got". I don't write code (not since 8080 days), and I don't design circuitry (but I'm good with soldering iron and wire wrap gun). I guess my official capacity is 'implementor'. I use whatever's available. I helped NK6K put up the first digipeater in the L.A. area (a TNC-1; lasted about a week before it crashed; those were the bad old days, eh, Harold?). ThenTNC2's, then NET/ROM and K9NG modems. I use JNOS at home, and mess around with Linux, but due to reality (work and $ constraints, and a chronic case of mild burnout), haven't done much else lately.

But to the point: I am in the fortunate position of datacomm/WAN/LAN manager for a national data/voice mux manufacturer (MICOM), and pretty much have free rein of our 56K leased lines. I took advantage of that several years ago and with the assistance of hams in Chicago, created a packet wormhole between Chicago and L.A. We've since expanded it to St. Louis, and briefly, to New Jersey, using G8BPQ's PC-NODE software.

I have 56K links to additional company offices that would make nifty wormhole ports in the following cities: Santa Clara, CA; Irving, TX; Atlanta, GA and Boston, MA.

I don't have the resorces personally to install and maintain packet nodes in those cities. I've tried various methods of eliciting interest and support from various packeteers or packet groups in those cities, and never gotten anything past 'That's reallly neat! We'll get right back to you." (With the very notable exceptions of WB9MJN in Chicago and K0PFX in St. Louis; their efforts have been heroic and commendable).

So this is my last gasp offer. If you know of someone in any of those areas who is an implementor and may be interested, please have them contact me, and maybe we can get something going.

Other info: We are slowly preparing for converting the ham shack switch at work from G8BPQ to JNOS/DOS, with an ethernet port for axip. The shack is all mine, pretty much, with two pipes for coax to a 5 acre flat roof.

We are also planning on implementing a 'voice' wormhole with spare

voice ports on the same leased lines using a Link Comm RLC-3 controller.
 For better or worse, it looks like local support for that project will be
substantially better than the packet ports. (Also looking for implementors
for that project!)

And, I'll be expanding our leased line network this fall/next spring to
Singapore, Malaysia, Hong Kong and Taiwan..

Again, if this wasn't the appropriate forum for implementors, my
apologies and please provide suggestions for something more
appropriate

On the other hand, hopefully it was a welcome relief from the grinding
discussions of bit regeneration that have been going on recently :-)

Very 73 - Orv - wb6wey
orv@micom.com

42. Re: Bit Regeneration

From: ahgroff@dz12.cca.rockwell.com (A.H.Groff)
Date: Tue, 5 Jul 94 16:08:59 CDT
To: netsig@tcet.unt.edu
Message-ID: <9407052108.AA04514@dz12.cca.rockwell.com>
Rendered body type: text/plain

KY1T asked for a list of hardware that we used to construct our 9600 baud
bit regen UHF repeater...

The Modem is the TAPR modem with the internal clock and bit-regen options.
the modem is installed in a MFJ 1270 w/ X1J1 that serves as an interconnect to
a 220 node co-located on the same site. (note the TNC is NOT a part of the
bit regen function and only becomes active when packets need to move to/from
the 220 port)

  The radios are Motorola Flexar's, one for XMT and one for RCV. The flexar is
a very similar to the MAXAR and MOXY series radios. They are crystal controlled
bare bones 1980's vintage radios that work well at 9600. We did repackage the
radios into aluminum boxes for RF shielding.

  We are using a Motorola 4 cavity duplexer (I dont know the model number,
picked it up in Dayton fleamarket).

  The antenna is an 8 element DB Products offset array feed with 7/8 50 ohm
hardline up 270 ft.

  We are using standard voice repeater channel spacing and split.

 From an RF standpoint, do everything like you would do a Voice repeater.

 From a packet standpoint, interface the radios like 9600 baud data radios.

 I hope that helps....

AL, K0VM

43. Re: Bit Regeneration

From: Bdale Garbee <bdale@hipshack.gag.com>
Date: Tue, 5 Jul 1994 15:29:15 -0600
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <199407052129.PAA08798@hipshack.gag.com>
Rendered body type: text/plain

In article <9407052019.AA179523@tcet.unt.edu> you wrote:
:   I'd be interested in everything from the type of radios used
: right down to the duplexers and modems, if you'd be so kind...

Here's what I did. This for the 447.250 repeater on Pikes Peak...

A TAPR 9600 baud modem with the bit regenerator and clock options, modified
to interface to a Gracilis Packeten switch. We ran just the modem as a simple
regenerator for a while, then hooked it to the switch. I keep meaning to
write up the interface to the Packeten, if anyone wants the info, let me know.

A Motorola Mitrek UHF chassis, modified for repeater operation, and for
injection and extraction of the modulation "in the right places". We mod the
Mitreks differently than we've seen published before, to preserve completely
the analog tuneup procedures. One of the other guys at HP here did the work,
we're running both VHF and UHF Mitreks in a variety of repeater applications,
voice and digital. I can probably dig up the modification details if anyone

wants them.

We've got a 4-cavity Celwave duplexer, rack-mounted, and a Diamond X-50 dual-band antenna behind a Comet 2m/70cm/23cm triplexer (the antenna is shared with a 145.01 1200 baud port right now). The power supply is a Tripp-Lite unit, with a home-grown distribution panel including battery backup.

It's been running well for about a year, I'll probably go "up the hill" sometime around the first of August to blow the dust out and tweak a bit.

Bdale

44. Re: Bit Regeneration

From: mcdermot@eagle.aud.alcatel.com (Tom Mcdermott)
Date: Tue, 5 Jul 94 16:47:15 CDT
To: netsig@tcet.unt.edu
Message-ID: <9407052147.AA08610@eagle.aud.alcatel.com>
Rendered body type: text/plain

> From: bruce@pixar.com (Bruce Perens)

> > My recommendation, based on alpha=0.6 filters, is that the frequency
> > response should be flat, within 1db, from 10 hz to 8000 hz.
>
> My stereo isn't that flat :-). That's a good reason to use bit
> regeneration.
>

Really, it's not that hard to do with direct access to the varicap across the crystal, and it makes the link work much better. With your audio amp, you have lots of circuits to go through, lots of low-impedance circuits, and speakers to put up with. The transmit and receive signal paths in the radio are really easier. The TEXNET RCA700 radios we modified have transmit requency response from DC to over 200 khz that is flat much better than 1 db. The receive side is limited by the IF filter, but it is flat from DC to about 10 khz. I added adjustable equalization (both amplitude and group delay) to the receiver in case the filters were poor, in order to get it back flat again. About 3 db adjustment range on amplitude. Notice, we are DC-coupled. This makes the baseline wander problem go away. Easy 1-2 db SNR pickup.

> > Another point, the state-machine clock recovery circuit can produce a
> > significant amount of jitter on a received signal (especially when run at
> > 16x).
>
> Please clarify - does this mean:
>
> A. The modem will decode a bit incorrectly and pass on a correctly-clocked
> bit with an incorrect value.
>
> B. The modem will pass on bits with a spurious variation in duty-cycle from
> bit to bit.
>
> C. Something else.
>

A) will happen, due to the bit-regenerator making a wrong decision on the received signal. But it's not the primary problem I am discussing here. See discussion below.

B) is the primary effect. The duty-cycle may not be affected, but the arrival time of the bit will be affected. Jitter is the variation of the nominal bit arrival time from the ideal bit arrival time. The amount of time-deviation is the amplitude of the jitter, and how often this arrival time varies is the frequency of the jitter.

> If you would post a more detailed explanation of how the clock and the
> sense of the bits are recovered, I'd appreciate it and I'm sure others
> would. I haven't seen the PAL equations or flowcharts for the TAPR
> modem, though I've seen software implementations of UARTs. With a 16x
> clock, do we sample the slicer 16 times per bit-time, or less often? Do
> we run a sort of logical PLL to keep our clock in phase for the
> duration of a packet once we have recovered the clock of the first few
> bits, or is clock recovery "free-running"? Could we improve on this
> problem with a more sophisticated algorithm? Lots of microcontrollers
> can sample a bit at 614 KHz (64x clock) and have room for lots of other

> work, so can we improve on this with a software implementation?
>
>   Thanks
>
>   Bruce Perens AB6YM
>
>

        The state machine is fairly simple-minded. It samples the data bits
at some *approximate* multiple of the data-bit rate (say 16 times). Since
the 16x clock source is not synchronous with the received data, it's only
approximately 16x (within 100's of PPM, usually). When a transition of the
data bit from a one->zero (or from zero->one) is detected, the state machine
has information with which to correct it's understanding of the true
synchronous clock position. Ideally, the clock should sample the data bit
exaxctly in the 'center' of the bit, half-way between the transitions on
either side (assuming a channel with flat frequency response, and flat delay
response - voilating either of those assumptions can result in drastic
non-symetrical data bits). So, the state machine either advances or retards
the recoverd clock bit by one high-speed cycle (ie 1/16th of a databit time)
depending on whether the transition occured too soon or too late.

        This works OK, except that the state-machine is always drifting back
and forth between the two limits of the 1/16 cycle resolution of the counter
(for ideal data). When the real data, which has some filtering applied, is
received, it has some natural jitter of it's own due to the filtering (this
is not a defect!). Adding the two effects results in about +/- 2 cycles
of dither in the received clock posiiton with respect to the true databit
center. This represents +2/16, and -2/16 of the center when using a 16x clock.
With 64x, my guess (I've not observed 64x on the scope), I think it would be on
the order of +/- 3 cycles, or about +3/64, and -3/64 cycle.

        The deviation of the recovered bit center from the ideal bit center
causes the probability of a bit error to increase - the flip-flop on the
receiver is clocked by this signal, and it in effect 'samples' the received
analog databit at this exact time instant. This is the A) part of your
question above.

        The other effect is that this recovered clock also clocks out the
transmitted bit of the bit-regenerator transmit data. So, we have now
encoded some additional jitter into the transmitted data stream that did
not exist on what war received. When the second receiver is presented with this
signal, it's own clock recovery state-mahcine must now cope with both the
natural jitter, and this additional encoded jitter. So, it will probably
dither on the order of +/-4 cycles (+4/16, and -4/16) from the center of the
ideal bit position. The effect being a vastly increased probability of
a bit error being detected at the receiver, even though the bit-regenerator
made the correct decision on the bit. This is the B) part of your question,
above. So, it is desirable to reduce the jitter enhancement contributed by
the bit-regenerator.

        This can be accomplished by a circuit that averages the timing of the
databit transitions, rather than peak-detecting them as the state-machine does.
In essense, we want to use the difference between the ideal bit transition
time and the current instantaneous bit transition time, and then integrate
that error signal. This results in the mean, rather than the median
transition time being used as the clock recovery error signal. The
implementation of this is not so difficult as it might seem.

        My first 4PSK receiver utilized this kind of symbol-timing-recovery
circuit by using a transition detector, a low-Q band-pass-filter, and an
integrating filter to drive a PLL with small DC average error.

        Hope this helps. the subject of jitter is a complicated one to
discuss in a quantitive way.

                                                        - Tom

An excellent reference is "The Theory and Practise of Modem Design" by
J.A.C. Bingham. (Forget the publisher, I'll post if later if there is
interest). Bingham's treatment is more theoretical than some may like,
but the work is sound, and pragmatic.

45. Re: Bit Regeneration

From: Tim Baggett <wbaggett@NMSU.edu>
Date: Tue, 5 Jul 1994 17:26:57 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.87.9407051757.A22633-0100000@gauss>

Rendered body type: text/plain

Sigh.

Now I'll give my variation of this regenerative repeater business:

Two frequencies. One input, and one output. They may or may not be on the
same band. Cross banding will not require duplexers.

The regenerative repeater listens on its receive frequency and looks for
data just as any 9600 modem does. It FIFO's up a few bits to see if it is
a header flag, and if so it kicks up the transmitter. The transmitter
then takes these demodulated bits, modulates them again and spits them
back out on the transmit frequency.

Since there is a FIFO to detect when there is valid packet flags, the
transmitted bits lag the received bits by a few bit times (8?). These
first few bits received where the transmitter is off is the critical time in
which a collision may occur. For the remaining time the packet is heard
on the receive frequency, it is transmitted on the transmit frquency and
ALL stations will detect that the channel/repeater is busy. Hidden
transmitters are drastically reduced.

Received signals are demodulated into data bits, then modulated again
(regenerated) and retransmitted. Yes, bits received by the repeater are
retransmitted incorrectly. Big deal. Every user on the channel only has
to point a beam to the repeater (not tens of other stations) and tune
their modem for maximum proformance with the repeaters modem (not
everyone elses).

The repeater does not need to be smart at all. It can be completely brain
dead like a TAPR TNC. In fact the TAPR TNC is ready to perform all these
functions described above. It is NOT an AX25 digipeater. It is a data
repeater. It can pass AX.25, X.25, ROSE, TCP/IP, Appletalk, Ethernet,
TimNet, BudwiserNet or whatever protocol you want. Just transmit a flag
or some kind of identifying signal so the repeater knows that 'oh, there's a
packet being sent' so it can key the transmitter.

Now, that wasn`t all that bad now was it?

There is plenty of reading in the CNC proceedings regarding regenerative
repeaters. I highly recommend the volume set for those interested. Also
contact those who have installed such systems. You may also want to read
some about ethernet repeaters (they do incorporate smarts and decode the
packets, but they are regenerative - bridges retransmit noise and all)

Now if you excuse me I'll stumble off this soapbox and return to the real
world of networking where we have coax, twisted pair, fiber optics, and
proven technology.

73,
Tim

****
Tim Baggett, AA5DF   Electrical Engineering Student
                                      New Mexico State University
Internet: WBAGGETT@NMSU.EDU
AMPR: AA5DF@NMSUGW.AMPR.ORG   US Snail: 1805 Rentfrow Apt #1
(When on) AA5DF.AMPR.ORG   Las Cruces, NM 88001
****

46. Re: Bit Regeneration

From: Bdale Garbee <bdale@hipshack.gag.com>
Date: Tue, 5 Jul 1994 15:29:15 -0600
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <199407052129.PAA08798@hipshack.gag.com>
Rendered body type: text/plain

In article <9407052019.AA179523@tcet.unt.edu> you wrote:
:   I'd be interested in everything from the type of radios used
: right down to the duplexers and modems, if you'd be so kind...

Here's what I did. This for the 447.250 repeater on Pikes Peak...

A TAPR 9600 baud modem with the bit regenerator and clock options, modified
to interface to a Gracilis Packeten switch. We ran just the modem as a simple
regenerator for a while, then hooked it to the switch. I keep meaning to
write up the interface to the Packeten, if anyone wants the info, let me know.

A Motorola Mitrek UHF chassis, modified for repeater operation, and for injection and extraction of the modulation "in the right places". We mod the Mitreks differently than we've seen published before, to preserve completely the analog tuneup procedures. One of the other guys at HP here did the work, we're running both VHF and UHF Mitreks in a variety of repeater applications, voice and digital. I can probably dig up the modification details if anyone wants them.

We've got a 4-cavity Celwave duplexer, rack-mounted, and a Diamond X-50 dual-band antenna behind a Comet 2m/70cm/23cm triplexer (the antenna is shared with a 145.01 1200 baud port right now). The power supply is a Tripp-Lite unit, with a home-grown distribution panel including battery backup.

It's been running well for about a year, I'll probably go "up the hill" sometime around the first of August to blow the dust out and tweak a bit.

Bdale

47. Re: Bit Regeneration

From: mcdermot@eagle.aud.alcatel.com (Tom Mcdermott)
Date: Tue, 5 Jul 94 16:47:15 CDT
To: netsig@tcet.unt.edu
Message-ID: <9407052147.AA08610@eagle.aud.alcatel.com>
Rendered body type: text/plain

> From: bruce@pixar.com (Bruce Perens)

> > My recommendation, based on alpha=0.6 filters, is that the frequency
> > response should be flat, within 1db, from 10 hz to 8000 hz.
>
> My stereo isn't that flat :-). That's a good reason to use bit
> regeneration.
>

Really, it's not that hard to do with direct access to the varicap across the crystal, and it makes the link work much better. With your audio amp, you have lots of circuits to go through, lots of low-impedance circuits, and speakers to put up with. The transmit and receive signal paths in the radio are really easier. The TEXNET RCA700 radios we modified have transmit requency response from DC to over 200 khz that is flat much better than 1 db. The receive side is limited by the IF filter, but it is flat from DC to about 10 khz. I added adjustable equalization (both amplitude and group delay) to the receiver in case the filters were poor, in order to get it back flat again. About 3 db adjustment range on amplitude. Notice, we are DC-coupled. This makes the baseline wander problem go away. Easy 1-2 db SNR pickup.

> > Another point, the state-machine clock recovery circuit can produce a
> > significant amount of jitter on a received signal (especially when run at
> > 16x).
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> Please clarify - does this mean:
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> A. The modem will decode a bit incorrectly and pass on a correctly-clocked
> bit with an incorrect value.
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> B. The modem will pass on bits with a spurious variation in duty-cycle from
> bit to bit.
>
> C. Something else.
>

A) will happen, due to the bit-regenerator making a wrong decision on the received signal. But it's not the primary problem I am discussing here. See discussion below.

B) is the primary effect. The duty-cycle may not be affected, but the arrival time of the bit will be affected. Jitter is the variation of the nominal bit arrival time from the ideal bit arrival time. The amount of time-deviation is the amplitude of the jitter, and how often this arrival time varies is the frequency of the jitter.

> If you would post a more detailed explanation of how the clock and the
> sense of the bits are recovered, I'd appreciate it and I'm sure others
> would. I haven't seen the PAL equations or flowcharts for the TAPR

> modem, though I've seen software implementations of UARTs. With a 16x
> clock, do we sample the slicer 16 times per bit-time, or less often? Do
> we run a sort of logical PLL to keep our clock in phase for the
> duration of a packet once we have recovered the clock of the first few
> bits, or is clock recovery "free-running"? Could we improve on this
> problem with a more sophisticated algorithm? Lots of microcontrollers
> can sample a bit at 614 KHz (64x clock) and have room for lots of other
> work, so can we improve on this with a software implementation?
>
>   Thanks
>
>   Bruce Perens AB6YM
>
>

        The state machine is fairly simple-minded. It samples the data bits at some *approximate* multiple of the data-bit rate (say 16 times). Since the 16x clock source is not synchronous with the received data, it's only approximately 16x (within 100's of PPM, usually). When a transition of the data bit from a one->zero (or from zero->one) is detected, the state machine has information with which to correct it's understanding of the true synchronous clock position. Ideally, the clock should sample the data bit exaxctly in the 'center' of the bit, half-way between the transitions on either side (assuming a channel with flat frequency response, and flat delay response - voilating either of those assumptions can result in drastic non-symetrical data bits). So, the state machine either advances or retards the recoverd clock bit by one high-speed cycle (ie 1/16th of a databit time) depending on whether the transition occured too soon or too late.

        This works OK, except that the state-machine is always drifting back and forth between the two limits of the 1/16 cycle resolution of the counter (for ideal data). When the real data, which has some filtering applied, is received, it has some natural jitter of it's own due to the filtering (this is not a defect!). Adding the two effects results in about +/- 2 cycles of dither in the received clock posiiton with respect to the true databit center. This represents +2/16, and -2/16 of the center when using a 16x clock. With 64x, my guess (I've not observed 64x on the scope), I think it would be on the order of +/- 3 cycles, or about +3/64, and -3/64 cycle.

        The deviation of the recovered bit center from the ideal bit center causes the probability of a bit error to increase - the flip-flop on the receiver is clocked by this signal, and it in effect 'samples' the received analog databit at this exact time instant. This is the A) part of your question above.

        The other effect is that this recovered clock also clocks out the transmitted bit of the bit-regenerator transmit data. So, we have now encoded some additional jitter into the transmitted data stream that did not exist on what war received. When the second receiver is presented with this signal, it's own clock recovery state-mahcine must now cope with both the natural jitter, and this additional encoded jitter. So, it will probably dither on the order of +/-4 cycles (+4/16, and -4/16) from the center of the ideal bit position. The effect being a vastly increased probability of a bit error being detected at the receiver, even though the bit-regenerator made the correct decision on the bit. This is the B) part of your question, above. So, it is desirable to reduce the jitter enhancement contributed by the bit-regenerator.

        This can be accomplished by a circuit that averages the timing of the databit transitions, rather than peak-detecting them as the state-machine does. In essense, we want to use the difference between the ideal bit transition time and the current instantaneous bit transition time, and then integrate that error signal. This results in the mean, rather than the median transition time being used as the clock recovery error signal. The implementation of this is not so difficult as it might seem.

        My first 4PSK receiver utilized this kind of symbol-timing-recovery circuit by using a transition detector, a low-Q band-pass-filter, and an integrating filter to drive a PLL with small DC average error.

        Hope this helps. the subject of jitter is a complicated one to discuss in a quantitive way.

                                                                - Tom

An excellent reference is "The Theory and Practise of Modem Design" by J.A.C. Bingham. (Forget the publisher, I'll post if later if there is interest). Bingham's treatment is more theoretical than some may like, but the work is sound, and pragmatic.

48. Re: Bit Regeneration

From: David Bashaw <dbashaw@SynOptics.COM>
Date: Tue, 5 Jul 94 17:28:47 PDT
To: netsig@tcet.unt.edu
Message-ID: <9407060028.AA11583@rimbaud>
Rendered body type: text/plain

Bruce Perens wrote:
>"Twist" is poor equalization such that some frequencies in the audio
>passband have a different level than other frequencies. This is a
>problem for 1200-Baud AFSK systems, I don't know how bad it is for
>9600-Baud direct FSK. A bit-regenerator would not pass this on.
>Neither would a digipeater.
>
>   Bruce Perens AB6YM

Perhaps requesting radio mfg's provide (as an option?) bandpass filters
with a better liner phase response. This would make the square waves more square
and allow radios from different mfg's to interoperate more predictably at 9600!

The only reason I suggets this is that someone proposed a standard digital radio
interface not long ago. Lets not stop there. The easier it is to get radios running
at 9600 the more users we'll have at decent speeds. If the radio as well as the
digital interface all can behave predictably things should be better.

If aligning modems is a problem maybe a cheap circuit can be designed to emit
a pseudo random sequence the modem could see. Diagnostic code could analyze the
eye pattern to see when the tuning is optimum (if current hardware supports all
this). This way practically the only variable left is the radio. But, alas I've
yet to tweak a radio for 9600. If there was someone to talk to at 9600 maybe
I would. (am I part of the problem here or part of the solution :>)).

Dave Bashaw
wa6qwl

---

49. Re: split the

From: "John T. Gubernard" <jtg@intac.com>
Date: Tue, 5 Jul 94 15:56:26 EDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <309.jtg@saturn.intac.com>
Rendered body type: text/plain

As an interested reader of the NetSig, of which I find very informative,
I VOTE for ** NOT ** splitting it up.

```
        **   73, John  **
       _____________________
      |  John T. Gubernard  |
      |   jtg@intac.com     |
      |       K2LSX         |
      |_____________________|
```

---

50. Re: Modem Book

From: ssampson@sabea-oc.af.mil (Steve Sampson)
Date: Tue, 5 Jul 1994 23:56:14 -0500 (CDT)
To: netsig@tcet.unt.edu
Message-ID: <9407060456.AA14680@sabea-oc.af.mil>
Rendered body type: text/plain

I Looked up the author on the OU library computer (405) 325-7719 2400 baud:

```
 Title:          The theory and practice of modem design
 Author:         Bingham, John A. C.

 Publication:    New York : Wiley, c1988.

 Subject Headings:
                 Modems--Design and construction.

 Description:    xvi, 453 p. : ill. ; 24 cm.

 Notes:          "A Wiley-Interscience publication."
                 Includes index.
                 Bibliography: p. 434-448.
```

--
Steve

---

51. Re: splitting

From: "John T. Gubernard" <jtg@intac.com>
Date: Wed, 6 Jul 94 01:04:01 EDT
To: netsig@tcet.unt.edu
Message-ID: <319.jtg@saturn.intac.com>
Rendered body type: text/plain

** 73, John **

 ____
| John T. Gubernard |
| jtg@intac.com |
| K2LSX |
|_____________________|

52. Re: Bit Regeneration

From: Adrian Godwin <agodwin@acorn.co.uk>
Date: Wed, 06 Jul 1994 09:59:47 +0100
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <9407060859.AA28476@snark.acorn.co.uk>
Rendered body type: text/plain

> From: bruce@pixar.com (Bruce Perens)

> problem with a more sophisticated algorithm? Lots of microcontrollers
> can sample a bit at 614 KHz (64x clock) and have room for lots of other
> work, so can we improve on this with a software implementation?
>

This may not be directly relevant, since it was a software fifo rather
than software clock recovery, but G6COQ built the reclocker in software
(on an 8051) for a repeater here. It uses the clock recovery of the G3RUH
modem to clock rx data into the fifo (which is the 8051's register file)
and a timer interrupt to clock it back out.

There must be some jitter generated by the variable interrupt latency
of the transmit handler (though there are no other interrupts to handle,
so it's only one instruction at worst), but I'm not sure how much offhand.
I think the 8051 is pretty busy, though - it wouldn't work much faster
than 9600 bps. It does handle CW ident, but can't receive while it's
doing that. It's the original slow 8051, not one of the new faster
versions.

Note that there's no TNC involved here at all : there's no other
digital mode stuff on site, and the repeater is the bit-regenerating
version of a bent pipe repeater, so there's no requirement for any
higher level processing.

Other hardware details for those interested : it's constructed out of
two commercial radios (Pye/Philips FM1000) and has a duplexer. This was
already on site, as the system replaced a former RTTY repeater.
However, the same system has been tested with simply a wide split
(extreme end of 70cm band) and was workable.

Two problems :

The radios are slow to key up, so much so that the fifo isn't long
enough to buffer the received packet. Effectively, this means you have
to waste a transmission to wake the repeater up. This does need some
attention - it's possible for a single user to fail forever if the
retransmission timer is longer than the repeater timeout !

The primary band user asked us to shut it down again :-(. New channel
allocations have been applied for.

53. Re: Bit Regeneration

From: Adrian Godwin <agodwin@acorn.co.uk>
Date: Wed, 06 Jul 1994 10:05:13 +0100
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <9407060905.AA28487@snark.acorn.co.uk>
Rendered body type: text/plain

> From: Klarsen <klarsen@acca.nmsu.edu>

>   Just a thought Harold, with my system doesn't the tnc get another
> packet from the reciever on a duplex system while it is sending one out
> over the transmitt frequency? Since we use a hardware nrz packet forming
> device it would seem at least possible to be receiving a packet at the
> same time it is sending one.
>   In fact that is how it WILL work! So my "digipeater" with

> seperate receive and transmitt frequency's will run almost as fast as a
> bit-wise system.
>

But you lose the main advantage of the repeater.

The repeater reduces collisions by permitting all the users to hear that
channel's busy : if they ignore the DCD on the output channel (because
they know it's a previous packet), they're competing for the input channel
with normal AX.25 rules. So they all collide again !

-adrian

54. Re: splitting

From: ssampson@sabea-oc.af.mil (Steve Sampson)
Date: Wed, 6 Jul 1994 06:29:15 -0500 (CDT)
To: netsig@tcet.unt.edu
Message-ID: <9407061129.AA00424@sabea-oc.af.mil>
Rendered body type: text/plain

> Let's split the sig . . .

Sounds like the dweebs on Usenet every week. These people aren't
happy unless they subscribe to 250 sigs and have to use a database
to track it all. . .

There's an old method I use. You just delete the message before
reading of any subject that you don't want to be subjected too
any more. Much better than splitting.

P.S. Don't respond to this subject,
Best Regards's :-)

--
Steve

55. Re: Bit Regeneration

From: mcdermot@eagle.aud.alcatel.com (Tom Mcdermott)
Date: Wed, 6 Jul 94 07:58:15 CDT
To: netsig@tcet.unt.edu
Message-ID: <9407061258.AA09275@eagle.aud.alcatel.com>
Rendered body type: text/plain

> From: David Bashaw <dbashaw@SynOptics.COM>

 ...stuff deleted...

> Perhaps requesting radio mfg's provide (as an option?) bandpass filters
> with a better liner phase response. This would make the square waves more square
> and allow radios from different mfg's to interoperate more predictably at 9600!
>
> The only reason I suggets this is that someone proposed a standard digital radio
> interface not long ago. Lets not stop there. The easier it is to get radios running
> at 9600 the more users we'll have at decent speeds. If the radio as well as the
> digital interface all can behave predictably things should be better.
>
> If aligning modems is a problem maybe a cheap circuit can be designed to emit
> a pseudo random sequence the modem could see. Diagnostic code could analyze the
> eye pattern to see when the tuning is optimum (if current hardware supports all
> this). This way practically the only variable left is the radio. But, alas I've
> yet to tweak a radio for 9600. If there was someone to talk to at 9600 maybe
> I would. (am I part of the problem here or part of the solution :>)).
>
>
> Dave Bashaw
> wa6qwl
>
>
>

Dave: developing a specification for the frequency response of the transmit
and receive portions of a 9600 bps radio is indeed the correct thing to do.
I have recommended a channel (T+R) response of 1 db flatness from 10 Hz to
8000 Hz.   If you make the channel this flat, then any group delay (phase
non-linearity) is very likely to be small, also. By specifing the radio,
the modems themselves should implement additional filtering. Generally,
we do no want square-ish look receive waveforms, because that means that
the high-frequency resopnse is too large, and thus the signal will be easily
degraded by high-frequency noise in the receiver.

There is an optimum response (or actually a family of them, really) that
results in the optimum receive SNR. They are raised-cosine, with x/sin(x)
precompensation. I presented this at HAMCOM '94 in Dallas, showing the
derivation, intuitively (no math!), in both frequency and time domains.
It sounds complicated, but really, it's not so bad... just takes an hour to
explain. Anyway, by making the radio flat, and then letting the modem do the
desired filtering, a simple, cost-effective, and high-performance solution
can be worked out.

The TPRS and K9NG modems already have a 17-stage scrambler in them, all that
needs to be done is to key up the transmitter constantly, and the modem
will put out a pseudo-random data stream. This is excellent for tuning
the receiver by looking at the eye-pattern. I have spent many hours doing
exactly this with the TPRS modem, which has adjustable amplitude and group
delay equalization on the receiver (two pots). I have found that we were
able to get the RCA700's flat enough in group delay, that the group-delay
adjustment was not needed at all. However, the original 220 Mhz. HAMCOM FM-5
had a terrible IF filter, and it would not work at all without the group
delay equalizer on the receiver.

- Tom

56. Re: Bit Regeneration

From: David Bashaw <dbashaw@SynOptics.COM>
Date: Wed, 6 Jul 94 08:22:03 PDT
To: netsig@tcet.unt.edu
Message-ID: <9407061522.AA11674@rimbaud>
Rendered body type: text/plain

>From Tom Mcdermott:

>There is an optimum response (or actually a family of them, really) that
>results in the optimum receive SNR. They are raised-cosine, with x/sin(x)
>precompensation. I presented this at HAMCOM '94 in Dallas, showing the
>derivation, intuitively (no math!), in both frequency and time domains.
>It sounds complicated, but really, it's not so bad... just takes an hour to
>explain. Anyway, by making the radio flat, and then letting the modem do the
>desired filtering, a simple, cost-effective, and high-performance solution
>can be worked out.

Excellent idea! How can we get the radio mfg's to listen to such good ideas?

>The TPRS and K9NG modems already have a 17-stage scrambler in them, all that
>needs to be done is to key up the transmitter constantly, and the modem
>will put out a pseudo-random data stream. This is excellent for tuning
>the receiver by looking at the eye-pattern. I have spent many hours doing
>exactly this with the TPRS modem, which has adjustable amplitude and group
>delay equalization on the receiver (two pots).

Are you using an 'o'-scope for this eye tuning? Others were complaining of
not getting the modem kit working. Was it because of these filters not being
aligned correctly? My suggestion for an external circuit may not be valid but
there may be some merit in providing for tuning via firmware. If it is possible
for the h/w to monitor the rx signal the tuning could be done without the need
for a scope. I guess I'm looking for a way to monitor the eye pattern in
software like you can with Rockwell chips. I must be dreaming.

Dave
wa6qwl

57. Re: splitting

From: bruce@pixar.com (Bruce Perens)
Date: Wed, 6 Jul 94 10:03 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <m0qLaNi-0005p7C@mongo.pixar.com>
Rendered body type: text/plain

>From Bruce:
> Let's split the sig . . .

>From: ssampson@sabea-oc.af.mil (Steve Sampson)
> Sounds like the dweebs on Usenet every week.

I have so far maintained a 100% record of civil responses to un-civil
people on this channel.

> You just delete the message before reading of any subject that you
> don't want to be subjected too any more.

The problem is that I want to read the more technical users, and _they_
leave the channel because of abuse from short-sighted people.
Sure, they could delete subjects, but it's easier for them to simply
leave. They don't need to waste their time on the vast unwashed masses.

Thus, PLEASE let them speak without molestation. That's all that is
necessary.

        Bruce

58. RE: Bit Regeneration

From: jra1854@tntech.edu (Jeffrey Austen)
Date: Wed, 06 Jul 1994 13:34:44 -0600
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <01HEDZ37JUJM95NFIL@tntech.edu>
Rendered body type: text/plain

>Perhaps requesting radio mfg's provide (as an option?) bandpass filters
>with a better liner phase response. This would make the square waves more
>square....

We don't want square waves. In fact, we really don't care what the pulse
looks like. (Well, we do, but for reasons of spectrum control and timing
recovery, but we'll ignore that for the moment.) All we want is for the
signal-to-noise ratio to be as large as possible at the moment that we make
the decision as to whether it is a 1 or a 0.

One thing we need to do is to define the transmitted pulse shape so that
equipment designers know what they are supposed to be sending and
receiving.

>The only reason I suggets this is that someone proposed a standard digital
>>radio interface not long ago. Lets not stop there.

That was me. I'm still working on it.

Jeff, k9ja

+-+
Jeffrey Austen | Tennessee Technological University
jra1854@tntech.edu | Box 5004
(615) 372-3485 | Cookeville Tennessee 38505   U.S.A.

59. Re: Bit Regeneration

From: David Bashaw <dbashaw@SynOptics.COM>
Date: Wed, 6 Jul 94 08:22:03 PDT
To: netsig@tcet.unt.edu
Message-ID: <9407061522.AA11674@rimbaud>
Rendered body type: text/plain

>From Tom Mcdermott:

>There is an optimum response (or actually a family of them, really) that
>results in the optimum receive SNR. They are raised-cosine, with x/sin(x)
>precompensation. I presented this at HAMCOM '94 in Dallas, showing the
>derivation, intuitively (no math!), in both frequency and time domains.
>It sounds complicated, but really, it's not so bad... just takes an hour to
>explain. Anyway, by making the radio flat, and then letting the modem do the
>desired filtering, a simple, cost-effective, and high-performance solution
>can be worked out.

Excellent idea! How can we get the radio mfg's to listen to such good ideas?

>The TPRS and K9NG modems already have a 17-stage scrambler in them, all that
>needs to be done is to key up the transmitter constantly, and the modem
>will put out a pseudo-random data stream. This is excellent for tuning
>the receiver by looking at the eye-pattern. I have spent many hours doing
>exactly this with the TPRS modem, which has adjustable amplitude and group
>delay equalization on the receiver (two pots).

Are you using an 'o'-scope for this eye tuning? Others were complaining of
not getting the modem kit working. Was it because of these filters not being
aligned correctly? My suggestion for an external circuit may not be valid but
there may be some merit in providing for tuning via firmware. If it is possible
for the h/w to monitor the rx signal the tuning could be done without the need
for a scope. I guess I'm looking for a way to monitor the eye pattern in
software like you can with Rockwell chips. I must be dreaming.

Dave
wa6qwl

60. Re: splitting

From: bruce@pixar.com (Bruce Perens)
Date: Wed, 6 Jul 94 10:03 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <m0qLaNi-0005p7C@mongo.pixar.com>
Rendered body type: text/plain

>From Bruce:
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>From: ssampson@sabea-oc.af.mil (Steve Sampson)
> Sounds like the dweebs on Usenet every week.

I have so far maintained a 100% record of civil responses to un-civil
people on this channel.

> You just delete the message before reading of any subject that you
> don't want to be subjected too any more.

The problem is that I want to read the more technical users, and _they_
leave the channel because of abuse from short-sighted people.
Sure, they could delete subjects, but it's easier for them to simply
leave. They don't need to waste their time on the vast unwashed masses.

Thus, PLEASE let them speak without molestation. That's all that is
necessary.

Bruce

61. RE: Bit Regeneration

From: jra1854@tntech.edu (Jeffrey Austen)
Date: Wed, 06 Jul 1994 13:34:44 -0600
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <01HEDZ37JUJM95NFIL@tntech.edu>
Rendered body type: text/plain

>Perhaps requesting radio mfg's provide (as an option?) bandpass filters
>with a better liner phase response. This would make the square waves more
>square....

We don't want square waves. In fact, we really don't care what the pulse
looks like. (Well, we do, but for reasons of spectrum control and timing
recovery, but we'll ignore that for the moment.) All we want is for the
signal-to-noise ratio to be as large as possible at the moment that we make
the decision as to whether it is a 1 or a 0.

One thing we need to do is to define the transmitted pulse shape so that
equipment designers know what they are supposed to be sending and
receiving.

>The only reason I suggets this is that someone proposed a standard digital
>>radio interface not long ago. Lets not stop there.

That was me. I'm still working on it.

Jeff, k9ja

+-+
Jeffrey Austen | Tennessee Technological University
jra1854@tntech.edu | Box 5004
(615) 372-3485 | Cookeville Tennessee 38505   U.S.A.

62. Re: split the

From: "Gary McDuffie, Sr." <mcduffie@hannibal.wncc.cc.ne.us>
Date: Wed, 6 Jul 1994 14:07:50 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9407061411.A5533-0100000@hannibal>
Rendered body type: text/plain

On Tue, 5 Jul 1994, TAPR Network Special Interest Group wrote:

> From: Adrian Godwin <agodwin@acorn.co.uk>
> Subject: Re: split the
> To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
> Date: Tue, 05 Jul 1994 15:35:39 +0100

>
> I think I'd rather see more tolerance and cross-fertilization than
> the creation of two camps. I wouldn't want to lose either of them.

I agree. I've been quietly reading this stuff for only a short time. I
was very impressed in the beginning with the intelligent DISCUSSION of
important topics. It was a welcome relief from all the bickering of both
packet and the normal news groups. In fact, I had encouraged some
friends, who are newbies on internet, to subscribe for that very reason.
I think we all know where we can find the name calling and bitching and
moaning. Let's keep this thing as it has been in the recent past. It's
been VERY interesting "monitoring" the planning of tomorrow's networks,
up to now.

Gary

P.S. Thank ALL of you shakers a movers for your work!

63. Re: Bit Regeneration

From: mcdermot@eagle.aud.alcatel.com (Tom Mcdermott)
Date: Wed, 6 Jul 94 16:50:32 CDT
To: netsig@tcet.unt.edu
Message-ID: <9407062150.AA09558@eagle.aud.alcatel.com>
Rendered body type: text/plain

> From: David Bashaw <dbashaw@SynOptics.COM>

> Are you using an 'o'-scope for this eye tuning? Others were complaining of
> not getting the modem kit working. Was it because of these filters not being
> aligned correctly? My suggestion for an external circuit may not be valid but
> there may be some merit in providing for tuning via firmware. If it is possible
> for the h/w to monitor the rx signal the tuning could be done without the need
> for a scope. I guess I'm looking for a way to monitor the eye pattern in
> software like you can with Rockwell chips. I must be dreaming.
>
> Dave
> wa6qwl
>

Dave: yes, I am using an oscilloscope to view the eye patterns. I trigger
the scope off of the recovered clock on the 'D' flipflop clock input,
and view the analog signal sent to the 'D' flipflop data input. I suspect
that most of the problems people have in making 9600 work has to do with
frequency response problems. Several 'problem' radios that I have been asked
to look at for TEXNET have almost always turned out to be frequency response
related. The other major problems are frequency error, discriminator tuning,
and T/R delay.

For the hardware to monitor the 'eye' pattern is more problematic. There are
several ways, mostly having to do with pseudo-error thresholds, but I'm not
sure this makes tuning any easier. A scope is the best way.

Monitoring the eye pattern in software is easy if you have a DSP unit (which
is what the Rockwell chips are) doing the modem function. In fact, the
Rockwell chips implement an 'adaptive equalizer' in the DSP code to adjust
the receive frequency response for perfect equalization. Of course, there
are limits as to how much error can be equalized. Also, the equalizer takes
some time to arrive at the answer. While this is not a problem in a point
to point full duplex landline circuit, it is a problem in a multipoint
circuit, where a different tranmsitter (and a different channel response)
may be sent to you on each transmission. Adaptive equalization must be very
accurate in a muli-level modulation scheme, much less accurate in 2-level FSK.

The eye pattern put out by the DSP units is a sample-and-hold of the 'I' and
'Q' constellations. In 2-level FSK, of course we have only the 'I' (Inphase)
signal, and it is two levels, so the constellation diagram is somewhat
less meaningful that it is in multi-level modulation. Sample-and-hold is
real easy in a DSP chip, a little more work in hardware.

The issue with DSP is cost and reliability. A 9600 BPS modem with adaptive
capability is a real high performance DSP engine, and that means somewhat
expensive. Also, the DSP has to operate reliably on a mountain-top, has
to know how to recover from hung software, re-boot, etc. without help.
The analog modem I designed for Texnet, while far from perfect, works pretty
good, is very low cost, is highly reliable, and has no software!
So it may be a better tradeoff for a remote unattended site.

- Tom

64. RE: Bit Regeneration

From: mcdermot@eagle.aud.alcatel.com (Tom Mcdermott)
Date: Wed, 6 Jul 94 16:56:26 CDT
To: netsig@tcet.unt.edu
Message-ID: <9407062156.AA09561@eagle.aud.alcatel.com>
Rendered body type: text/plain

> From: jra1854@tntech.edu (Jeffrey Austen)
> Subject: RE: Bit Regeneration
> To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
> Date: Wed, 06 Jul 1994 13:34:44 -0600
>
> >Perhaps requesting radio mfg's provide (as an option?) bandpass filters
> >with a better liner phase response. This would make the square waves more
> >square....
>
> We don't want square waves. In fact, we really don't care what the pulse
> looks like. (Well, we do, but for reasons of spectrum control and timing
> recovery, but we'll ignore that for the moment.) All we want is for the
> signal-to-noise ratio to be as large as possible at the moment that we make
> the decision as to whether it is a 1 or a 0.
>
> One thing we need to do is to define the transmitted pulse shape so that
> equipment designers know what they are supposed to be sending and
> receiving.

We also care about the inter-symbol interference (ISI) at the moment that
we make to 1/0 decision. For that reason, the exact pulse shape is in fact
very important (also, as you mentioned, for clock recovery and spectrum
control). Minimizing ISI is extremely important!

So, as for a recommended tranmsit pulse shape, it should x/sin(x) followed
by square-root-of-raised-cosine, with alpha picked to be some easily
implementable value (I chose 0.6, your mileage may vary).

                                                        - Tom

65. June Messages

From: Greg Jones <gjones@tenet.edu>
Date: Wed, 6 Jul 1994 17:14:32 -0500 (CDT)
To: netsig@tcet.unt.edu (NETSIG mailing)
Message-ID: <199407062214.RAA00898@Kay-Abernathy.tenet.edu>
Rendered body type: text/plain

June NETSIG Messages have been stored in the tapr SIG area (ftp)

system: tcet.unt.edu
login: anonymous
directory: tapr/SIGS

Cheers - Greg

TAPR Office (817) 383-0000 | Internet: gjones@tenet.edu
---

66. RE: Bit Regeneration

From: Tim Baggett <wbaggett@NMSU.edu>
Date: Wed, 6 Jul 1994 20:27:28 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.87.9407062028.B1707-0100000@gauss>
Rendered body type: text/plain

On Wed, 6 Jul 1994, TAPR Network Special Interest Group wrote:

> From: mcdermot@eagle.aud.alcatel.com (Tom Mcdermott)
> Subject: RE: Bit Regeneration
> To: netsig@tcet.unt.edu
> Date: Wed, 6 Jul 94 16:56:26 CDT
>
>
>
> So, as for a recommended tranmsit pulse shape, it should x/sin(x) followed
> by square-root-of-raised-cosine, with alpha picked to be some easily
> implementable value (I chose 0.6, your mileage may vary).
>
>   - Tom

Tom, I saw this in a message earlier today and just thought it was a typo...

Shouldn't it be sin(x)/x (otherwise known as the sinc(x) function) ?

Ya have be searching for Sklar's book again! :-)

73
Tim

****
Tim Baggett, AA5DF   Electrical Engineering Student
                                      New Mexico State University
Internet: WBAGGETT@NMSU.EDU
AMPR: AA5DF@NMSUGW.AMPR.ORG   US Snail: 1805 Rentfrow Apt #1
(When on) AA5DF.AMPR.ORG   Las Cruces, NM 88001
****

67. June Messages

From: Greg Jones <gjones@tenet.edu>
Date: Wed, 6 Jul 1994 17:14:32 -0500 (CDT)
To: netsig@tcet.unt.edu (NETSIG mailing)
Message-ID: <199407062214.RAA00898@Kay-Abernathy.tenet.edu>
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June NETSIG Messages have been stored in the tapr SIG area (ftp)

system: tcet.unt.edu
login: anonymous
directory: tapr/SIGS

Cheers - Greg

TAPR Office (817) 383-0000 | Internet: gjones@tenet.edu
---

68. RE: Bit Regeneration

From: mcdermot@eagle.aud.alcatel.com (Tom Mcdermott)
Date: Thu, 7 Jul 94 08:01:01 CDT
To: netsig@tcet.unt.edu
Message-ID: <9407071301.AA10176@eagle.aud.alcatel.com>
Rendered body type: text/plain

> From: Tim Baggett <wbaggett@NMSU.edu>
> Subject: RE: Bit Regeneration
> To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
> Date: Wed, 6 Jul 1994 20:27:28 -0600 (MDT)
>
> On Wed, 6 Jul 1994, TAPR Network Special Interest Group wrote:
>
> > From: mcdermot@eagle.aud.alcatel.com (Tom Mcdermott)
> > Subject: RE: Bit Regeneration
> > To: netsig@tcet.unt.edu
> > Date: Wed, 6 Jul 94 16:56:26 CDT
> >
> >
> >
> > So, as for a recommended tranmsit pulse shape, it should x/sin(x) followed
> > by square-root-of-raised-cosine, with alpha picked to be some easily
> > implementable value (I chose 0.6, your mileage may vary).
> >
> >   - Tom
>
> Tom, I saw this in a message earlier today and just thought it was a typo...
>
> Shouldn't it be sin(x)/x (otherwise known as the sinc(x) function) ?
>
> Ya have be searching for Sklar's book again! :-)
>
> 73
> Tim
>

Tim: no, it is correct as written. We want to put x/sin(x) precompensation on the tranmsit end. On our transitters, we take sampled data signals, which is the periodic impulse sequence multiplied by the data stream (i.e. an infinitely-skinny impulse for a one, no pulse for a zero) and we turn that signal (which has infinite, flat frequency) into a square wave. It's easy to see that the frequency response of a square wave is sin(x)/x, and the response of the impulse-stream being flat means that the

correction is obviously 1/(sin(x)/x) or x/xin(x). Thus, we must counteract that filter with it's inverse, x/sin(x).

        You may think we are transmitting squarewaves, but we are actually transmitting and receiving the impulse-streams. At the receiver, we use a sampling device (a flip-flop) which takes an (almost) infinitely-narrow sample of the received analog signal at exactly the right time. Of course, the output of the Rx flip-flop is a square-wave, but it's digital at this point, so we don't care. Thus, the desired channel frequency response must allow passing of these impulse-streams, modified by the frequency shaping filters.

        By pre-compensating the transmitter, we then can apply the raised-cosine response to the remainder of the channel. We put half of it at the transmitter (square-root) and half at the receiver (square-root). There is a mathematical proof of the optimality of this solution.

        Practically, if we neglect the x/sin(x) precompensation, the eye pattern is closed by 6 db in the center of the bit period, which can be easily observed on a scope. I have written C++ and QBASIC software that allows generating eye patterns given the channel (complex) frequency response. It models the actual hardware I have built with remarkable agreement, and is very helpful is allowing an intuitive feel for what you have to do to make it work right.

        The concept is straight-forward: 1) collect the complex-frequency response of the channel as a set of (Re,Im) pairs vs. frequency. If you have only samples from 0 to fs/2, then you need to mirror the frequency from fs/2 to 1 using the complex-conjugate of the samples. Then oversample the data set for increased time resolution of the next step.   2) Take the Inverse Fourier Transform of this set, yielding the channel impulse response. 3) Adjust the delay of the impulse response so that the resulting filter is causal. (ie: the filter doesn't 'anticipate' what is put into it). 4) Take the linear convolution of this modified impulse response with a psuedo-random data stream (I used 2^7 - 1). An FIR filter is the DSP implementation of the linear-convolution integral. 5) Plot the resultant signal vs. time, and overlap all sequences in multiples of the data rate (eye pattern generation).

                                                - Tom, N5EG

69. Re: splitting

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Thu, 7 Jul 1994 07:34:34 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9407070720.A17510-0100000@kazak>
Rendered body type: text/plain

On Wed, 6 Jul 1994, TAPR Network Special Interest Group wrote:

> From: bruce@pixar.com (Bruce Perens)
> Subject: Re: splitting
> To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
> Date: Wed, 6 Jul 94 10:03 PDT
>
> >From Bruce:
> > Let's split the sig . . .
> The problem is that I want to read the more technical users, and _they_
> leave the channel because of abuse from short-sighted people.
                                        ^^^^^^^^^^^^^

> Sure, they could delete subjects, but it's easier for them to simply
> leave. They don't need to waste their time on the vast unwashed masses.
                                                  ^^^^^^^^^^^^^^

> Thus, PLEASE let them speak without molestation. That's all that is
                                      ^^^^^^^^^^^

> necessary.
>
>   Bruce

        Bruce I am surprised you feel the unwashed masses are pulling a major molestation on the RIGHT THINKING rocket scientist's that will leave this sig because no-one LOVES them.

        As a member of the unwashed masses and proud to be so I know for a fact that left to there own devices a rocket scientist will design on the rocket until he a. dies, b. Is told to quit NOW, c. is fired.

I also know that all hams are not rocket scientist's and you need from time-to-time to be able to explain how the rocket works...(G)

-karl k5di

70. Re: Bit Regeneration

From: bm@hydra.carleton.CA (Barry McLarnon VE3JF)
Date: Thu, 7 Jul 94 10:08:20 WET DST
To: netsig@tcet.unt.edu
Message-ID: <9407071408.AA02671@hydra.carleton.CA>
Rendered body type: text/plain

I didn't see any response to this, which leads me to believe that some further clarification of "bit regeneration" is needed before this thread winds down...

> From: Tim Baggett <wbaggett@NMSU.edu>
> Subject: Re: Bit Regeneration
> To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
> Date: Tue, 5 Jul 1994 17:26:57 -0600 (MDT)
>
> Sigh.

I'll see yours, and raise you one... :-)

> Now I'll give my variation of this regenerative repeater business:
>
> Two frequencies. One input, and one output. They may or may not be on the
> same band. Cross banding will not require duplexers.
>
> The regenerative repeater listens on its receive frequency and looks for
> data just as any 9600 modem does. It FIFO's up a few bits to see if it is
> a header flag, and if so it kicks up the transmitter. The transmitter
> then takes these demodulated bits, modulates them again and spits them
> back out on the transmit frequency.
>
> Since there is a FIFO to detect when there is valid packet flags, the
> transmitted bits lag the received bits by a few bit times (8?). These
> first few bits received where the transmitter is off is the critical time in
> which a collision may occur. For the remaining time the packet is heard
> on the receive frequency, it is transmitted on the transmit frquency and
> ALL stations will detect that the channel/repeater is busy. Hidden
> transmitters are drastically reduced.

Interesting concept, but no bit regen repeater that I know of works this way. A FIFO has no capability of detecting flags. It is simply a "rubber band" shift register that has separate clock inputs for clocking the bits in and out. A typical bit regen repeater works as follows:

(1) When the demod declares DCD is valid, the transmit side of the repeater keys up immediately. The recovered clock starts clocking the demodulated bits into the FIFO. No clocking of the output side of the FIFO occurs yet.

(2) When the FIFO is half full, the transmit clock is allowed to start clocking the bits into the modulator on the transmit side of the repeater. The delay introduced by the repeater is therefore one-half the FIFO depth times the symbol length (plus any delays inherent in the analog circuitry), which for a 9600 bps repeater using the TAPR modem amounts to about 0.83 ms. If the tx clock at the remote station using the repeater is higher in frequency than the tx clock at the repeater itself, the FIFO will slowly fill up... if it's lower, it slowly empties. The FIFO depth has to be sufficient to allow for the worst-case difference between modem bit rates (i.e., the accuracy of the oscillators in their baud rate generators) and the maximum length of packets the repeater will carry, since if the FIFO ever overflows or empties completely, the packet will be mutilated (more precisely, it's the maximum length of continuous transmissions - which may contain multiple packets - that's important).

(3) When the DCD drops, the repeater is keyed off immediately. It could have a small hang time to allow the remaining bits in the FIFO to get clocked out, but this is not usually needed... the decay time of the DCD circuit and the txtail time on the incoming packet will likely be enough to ensure that the packet emerges from the repeater intact.

A few more notes:

Packet repeaters eliminate hidden transmitters, which is a big win, but there is a small cost attached to this win in terms of increased collision windows.

Consider the case where station A decides to transmit, and station B is
listening (but could decide to transmit at any time). If B was listening to A
directly, the collision window would consist (ignoring propagation delays
et al) of the time it takes A to key up plus the time it takes B's DCD circuit
to declare that the channel is busy. But if they're using the repeater, the
collision window is lengthened by the DCD risetime and transmitter keyup time
of the repeater. So it is critical that these parameters be minimized at the
repeater *and* at the stations using it in order to maximize the benefits of
the repeater. The most difficult problem is the DCD at the repeater - it needs
to have fast acquisition time and yet be highly resistant to falsing, since
falsing eats up channel bandwidth. Maybe the idea of adding some intelligence
to the DCD such as looking for a flag sequence would have some merit, provided
that you don't have to trade off too much acquisition time to get the
improved falsing rate.

> Received signals are demodulated into data bits, then modulated again
> (regenerated) and retransmitted. Yes, bits received by the repeater are
> retransmitted incorrectly. Big deal. Every user on the channel only has
> to point a beam to the repeater (not tens of other stations) and tune
> their modem for maximum proformance with the repeaters modem (not
> everyone elses).

Yup, it really helps if none of the stations using the repeater is marginal.
If they all have a good clean signal into the repeater (a function of both
modem adjustment and signal strength), then it's easier to eliminate falsing
at the repeater. Of course, you still have to provide good front end
protection against intermod at the repeater receiver too.

> The repeater does not need to be smart at all. It can be completely brain
> dead like a TAPR TNC. In fact the TAPR TNC is ready to perform all these
> functions described above. It is NOT an AX25 digipeater. It is a data
> repeater. It can pass AX.25, X.25, ROSE, TCP/IP, Appletalk, Ethernet,
> TimNet, BudwiserNet or whatever protocol you want. Just transmit a flag
> or some kind of identifying signal so the repeater knows that 'oh, there's a
> packet being sent' so it can key the transmitter.

Like I said, the current generation of repeaters don't work that way (unless
someone can offer a counterexample?), but it's food for thought...

Barry

--
  Barry McLarnon VE3JF/VA3TCP | Internet: bm@hydra.carleton.ca
  Ottawa Amateur Radio Club | AMPRnet: barry@va3tcp.ampr.org
  Packet Working Group | FreeNet: aa187@freenet.carleton.ca

71. Re: Bit Regeneration

From: bm@hydra.carleton.CA (Barry McLarnon VE3JF)
Date: Thu, 7 Jul 94 10:25:27 WET DST
To: netsig@tcet.unt.edu
Message-ID: <9407071425.AA02726@hydra.carleton.CA>
Rendered body type: text/plain

> From: mcdermot@eagle.aud.alcatel.com (Tom Mcdermott)
> Subject: Re: Bit Regeneration
> To: netsig@tcet.unt.edu
> Date: Tue, 5 Jul 94 16:47:15 CDT
>
> >
> > Please clarify - does this mean:
> >
> > A. The modem will decode a bit incorrectly and pass on a correctly-clocked
> >   bit with an incorrect value.
> >
> > B. The modem will pass on bits with a spurious variation in duty-cycle from
> >   bit to bit.
> >
> > C. Something else.
> >
>
>   A) will happen, due to the bit-regenerator making a wrong decision
>   on the received signal. But it's not the primary problem I am
>   discussing here. See discussion below.
>
>   B) is the primary effect. The duty-cycle may not be affected, but
>   the arrival time of the bit will be affected. Jitter is the
>   variation of the nominal bit arrival time from the ideal bit
>   arrival time. The amount of time-deviation is the amplitude of the
>   jitter, and how often this arrival time varies is the frequency of

>   the jitter.

  [lots 'o stuff omitted]

>   The other effect is that this recovered clock also clocks out the
> transmitted bit of the bit-regenerator transmit data. So, we have now
> encoded some additional jitter into the transmitted data stream that did
> not exist on what war received. When the second receiver is presented with this
> signal, it's own clock recovery state-mahcine must now cope with both the
> natural jitter, and this additional encoded jitter. So, it will probably
> dither on the order of +/-4 cycles (+4/16, and -4/16) from the center of the
> ideal bit position. The effect being a vastly increased probability of
> a bit error being detected at the receiver, even though the bit-regenerator
> made the correct decision on the bit. This is the B) part of your question,
> above. So, it is desirable to reduce the jitter enhancement contributed by
> the bit-regenerator.

This may be true of the TPRS modem, but it's not true in general. In bit
regenerating repeaters using modems such as the GRAPES 56k or TAPR 9600 bps,
there is no accumulation of jitter in the repeater. The bits are clocked
out of the FIFO into the modulator by a locally-generated jitter-free transmit
clock. As long as there are no bit errors in the repeater demodulator's
decision circuit (and no FIFO overflow/underflow), the transmitted packet is
equivalent in quality to one which is generated at the repeater site. That's
the whole point of bit regeneration!

Barry

--
  Barry McLarnon VE3JF/VA3TCP | Internet: bm@hydra.carleton.ca
  Ottawa Amateur Radio Club | AMPRnet: barry@va3tcp.ampr.org
  Packet Working Group | FreeNet: aa187@freenet.carleton.ca

72. Pulse Shaping (was RE: Bit Regeneration)

From: jra1854@tntech.edu (Jeffrey Austen)
Date: Thu, 07 Jul 1994 11:15:51 -0600
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <01HEF8JCI12A95NQXS@tntech.edu>
Rendered body type: text/plain

>From: mcdermot@eagle.aud.alcatel.com (Tom Mcdermott)
>
>We also care about the inter-symbol interference (ISI) at the moment that
>we make to 1/0 decision. For that reason, the exact pulse shape is in fact
>very important (also, as you mentioned, for clock recovery and spectrum
>control). Minimizing ISI is extremely important!

True. I'm guilty of oversimplification.

>So, as for a recommended tranmsit pulse shape, it should x/sin(x) followed
>by square-root-of-raised-cosine, with alpha picked to be some easily
>implementable value (I chose 0.6, your mileage may vary).

I'm unclear as to what pulse shape you are recommending. Is it a raised
cosine spectrum pulse (often misleadingly called a raised cosine pulse)?
If so, that's a good first choice but I'd like to point out that we're
forgetting a few things.

 + The transmitter is nonlinear so we can't directly relate the pulse
   spectrum to the transmitted RF spectrum. [Clarification: Frequency
   modulation is a nonlinear operation. Input and output spectra cannot
   be easily related except in some special cases, like sinusoids.]
 + We put the modulated signal through a class C amplifier. Is the
   modulated signal constant envelope? If not, what happens to the
   pulse shape and spectrum?
 + We must tolerate less than ideal filters in the receiver, at least
   until manufacturers start selling true digital radios, not just
   something with an extra jack on the back panel.

There may be other pulse shapes more suited to this application. In
particular, the Gaussian pulse shape (GMSK) appears to have good
properties. We need to evaluate the options and decide on one particular
pulse shape so that we're all compatible with each other.

By the way, I'm interested in the equalizer that you mentioned. Is it
easily reproducable? We're suffering from pretty poor BER on our links
here and I suspect that is a major problem.

Jeff, k9ja

+-+
Jeffrey Austen | Tennessee Technological University
jra1854@tntech.edu | Box 5004
(615) 372-3485 | Cookeville Tennessee 38505   U.S.A.

73. RE: Bit Regeneration

From: ahgroff@dz12.cca.rockwell.com (A.H.Groff)
Date: Thu, 7 Jul 94 11:43:30 CDT
To: netsig@tcet.unt.edu
Message-ID: <9407071643.AA25783@dz12.cca.rockwell.com>
Rendered body type: text/plain

In a previous message, Tom Mcdermott, described tuning 9600 buad modems and radios using eye patterns...

I prefer to use a weak sign bit error method for tuning and evalution.

first i put the transmit side of the G3RUH style modem into the bit error rate test mode (all 0's before the scrambler) and put modem transmit output into the external modulation input of a direct FM signal generator (i.e. Motorola service monitor, etc) . I then feed the output of the service monitor to the input of the receiver/modem demodultor under test. I then hook up a audio amplifier to the data output of the modem (after the descrambler).
  If you have errors, you hear noise ; if you have no errors you hear no noise.

  If you adjust the signal generator level for a somewhat noisy level, you can tune the receiver front end, IF and discriminator and adjust any post detection compensation for minimum noise (minimum Errors).

  The error rate curve should be within a few DB of the FM quieting curve that you would expect with a voice system. With a strong signal there should be NO ERRORS.

  This setup also provides a means of evaluating, optimum deviation level that your rcvr wants to see and amount of frequency error that it will tolerate. errors)

  After you are done with the test be sure to put the bit error test jumper back into the data position!

AL, K0VM

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Date: Thu, 7 Jul 94 17:36:41 CDT
To: netsig@tcet.unt.edu
Message-ID: <9407072236.AA10280@eagle.aud.alcatel.com>
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        Barry: we have no bit-regeneration modes in our modem. You are correct, having a jitter-free transmit clock is ideal. I was unaware what has actually been implemented in Ham bit-regenerators, and was trying to caution against those who might implement one with a jitter-enhancement problem. I'm glad to see that the ones in use have been properly implemented.

- Tom

75. Re: Pulse Shaping (was RE: Bit Regeneration)

From: mcdermot@eagle.aud.alcatel.com (Tom Mcdermott)
Date: Thu, 7 Jul 94 17:59:56 CDT
To: netsig@tcet.unt.edu
Message-ID: <9407072259.AA10283@eagle.aud.alcatel.com>

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the baseband of the Tx to the baseband at the Rx. So, it has to compensate
for any non-linearities in the RF and IF chains. For FSK with a low deviation
index (3khz deviation at 9600 bps qualifies for low-deviation) the
non-linearities in the FM modulator, in the discriminator, in the transmit
PA, and in the IF filter will generally be negligible. Usually, one has
problems with excessive RF bandwidth when using PSK modulation. This is due
to the amplitude variations of a properly filtered PSK signal causing
excessive RF bandwidth when passed through a class-C amplifier. Even then,
the baseband pulse shape is not normally mangled too badly.

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>   until manufacturers start selling true digital radios, not just
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True. With low-deviation FSK systems, the distortions map very linearly
to the baseband, and thus can be compensated at baseband (which is much
easier to do than compensating at IF). In practice, commercial radios have
not presented a problem at 9600 bps. The HamTronics FM-5 caused me the most
grief due to it's poor IF filter. Amplitude equalization has addressed most
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passing it through a x/sin(x) and a square-root-of-raised-cosine frequency
response filter. The shape of the pulse can be described in either the
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> By the way, I'm interested in the equalizer that you mentioned. Is it
> easily reproducable? We're suffering from pretty poor BER on our links
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> Jeff, k9ja
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The baseband equalizer is very simple to implement, it is done with two
op-amps. The group-delay equalizer is an all-pass filter with a pot
controlling the time constant of the filter, and the amplitude equalizer is an
under-damped low-pass filter, with a pot controlling the damping level.
Let me know if you'd like me to send a schematic. I'm not so good at ASCII
art!

- Tom

76. RE: Bit Regeneration

From: mcdermot@eagle.aud.alcatel.com (Tom Mcdermott)
Date: Thu, 7 Jul 94 18:06:44 CDT
To: netsig@tcet.unt.edu
Message-ID: <9407072306.AA10287@eagle.aud.alcatel.com>

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> errors)
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>   After you are done with the test be sure to put the bit error test jumper
> back into the data position!
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Al: good suggestion! I forgot all about this technique when answering a previous message. We used to use it all the time when developing our lightwave transmission products in the lab. It works real well at high data rates, like 565 mb/s, since the probability of an error at 10E-9 BER still gives a 'click' every couple of seconds. At 9600 bps, the clicks don't occur very often at low error rates. Best of all, of course, is to plot BER vs. received signal strength on a graph. This will tell you if you have 'flare' in the BER curve (which you will have if there is any ISI), or will tell you if there are other problems.

77. Modem Design/Analysis Tools

From: ssampson@sabea-oc.af.mil (Steve Sampson)
Date: Thu, 7 Jul 1994 18:08:43 -0500 (CDT)
To: netsig@tcet.unt.edu
Message-ID: <9407072308.AA10604@sabea-oc.af.mil>
Rendered body type: text/plain

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> easily reproducable? We're suffering from pretty poor BER on our links
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I'm also interested. I've used a TEKK KS-900 radio, and an ICOM 228A with both not being as acceptable as desired. I've seen my 1200 link work but the 9600 not be able to make the path. I've tried to ensure that the RX frequency is right on the TX frequency at the other end, and have played with the jumpers on the G3RUH until I'm blue in the face, along with the deviation adjustment with each setting. Conclusion: this really makes me mad, because I don't have the proper test equipment or procedures to ensure the modem is deviating or shaping the waveform correctly. I do like the DRSI 9600 modem because there is no transmitter adjustment, but rather a receiver adjustment. In this case two users with different radios can at least adjust their receive with an O'scope until a good eye pattern is detected.

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ROM read the contents and drank it into Mathcad. I assume these waveforms
are scrambled time-domain representations of some filter. I've read the
two published articles by G3RUH and he is not deep enough in math to tell
what it is that he is doing. He's taken a complex subject and wrote for an
audience of people with a general math background. Not very valuable. Tom
has described better what he is doing, and probably can educate me or point
me to the right books. I printed the waveforms out as sine waves and they
are different, but don't make sense, probably because of the 17 bit register
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Maybe the answer really is to avoid 9600 alltogether. I just got started with
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Steve

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Date: Thu, 7 Jul 94 17:36:41 CDT
To: netsig@tcet.unt.edu
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82. ARRL CNC papers

From: Glenn Elmore <glenne@sr.hp.com>
Date: Fri, 8 Jul 1994 07:46:39 -0800 (PDT)
To: netsig@tcet.unt.edu (TAPR hsn)
Message-ID: <9407081446.AA10258@eagle.sr.hp.com>
Rendered body type: text/plain

I've added the Hubmaster protocol paper to those available with
anonymous ftp from col.hp.com   under ~/hamradio/packet/n6gn/arrlcnc
This is a paper from the 9th CNC which I coauthored with n6rce and n6plo.
It used Palatino font and there are two versions of it for those that
have printers which do/don't support them naturally.

Here's the readme:

```
------------------------------------------------------------------------
cnc9a.ps CNC 9 "Physical Layer Considerations In Building An Amateur
                Radio Network"

cnc9b.ps CNC 9 "Hubmaster: Cluster Based Access to High Speed Networks"
cnc9bfonts.ps same with Palatino fonts included (some printers don't
              have them)

cnc10.ps CNC 10 "Recent Hubmaster Networking Progress in Northern California"
```

These files are postscript renditions of papers authored and coauthored
by n6gn in the ARRL Computer Networking Conference proceedings. Because
the 9th conference proceedings is out of print, I've endeavored to make
postscript versions available for general access. In the case of
cnc9a.ps, this meant translation from the original troff scrolls and I
hope something wasn't lost in the process.

  cnc9b is the original Hubmaster paper co-authored by n6gn, n6plo and n6rce.
The "long" version is probably not necessary except for older printers which
may not have Palatino fonts locally.

73
Glenn n6gn

83. Re: Bit Regeneration

From: Adrian Godwin <agodwin@acorn.co.uk>
Date: Fri, 08 Jul 1994 16:19:55 +0100
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <9407081519.AA01840@snark.acorn.co.uk>
Rendered body type: text/plain

> From: ahgroff@dz12.cca.rockwell.com (A.H.Groff)
>
> first i put the transmit side of the G3RUH style modem into the bit error
> rate test mode (all 0's before the scrambler) and put modem transmit
> output into the external modulation input of a direct FM signal generator
> (i.e. Motorola service monitor, etc) . I then feed the output of the
> service
> monitor to the input of the receiver/modem demodultor under test. I then

I thought the G3RUH TX filter was intended to compensate for both the
receiver and the transmitter signal paths, but you're ignoring the
transmitter.

After the procedure you descibe, I'd expect you to compensate the transmitter
for minimum overall BER but this will only be possible if the transmitter
can be compensated to look just like the service monitor .. is that correct ?

-adrian

84. Re: Modem Design/Analysis Tools

From: Adrian Godwin <agodwin@acorn.co.uk>
Date: Fri, 08 Jul 1994 16:27:42 +0100
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <9407081527.AA01858@snark.acorn.co.uk>
Rendered body type: text/plain

> From: ssampson@sabea-oc.af.mil (Steve Sampson)
>
> I decided to analyze the G3RUH jumper settings and found that in the
> Kantronics version, that there are really only 16 settings, with these
> being duplicated again to fill out the ROM. I suspect the PACCOMM is
> identical in the ROM. Since these ROM data do not include many radios
> that Americans associate themselves with, the jumper names are worthless
> by themselves. You just keep twiddling until you get data flowing, and
> then that's the best you can do. Very bad news, I think. So I pulled the

> they must go through. I think the subject is very interesting and I am
> enjoying learning about digital filters, but there is an indepth need for an
> article, and/or software which can show how to derive a ROM waveform data.

G3RUH seems quite keen to offer a ROM-programming service himself, rather
than provide details of the calculations : this service is, however, not
expensive. The procedure for measuring the response is given in his
accompanying leaflet (which I think is the same as the article in the 7th
CNC) : I don't know whether Kamtronics provide the same procedure.

I appreciate that sending off the response and getting a ROM back isn't
as satisfying as calculating it yourself, but if you're not convinced
you're getting good results with the standard responses it might be
worth the trouble.

-adrian

85. Poll bit question (pse help)

From: "Gary McDuffie, Sr." <mcduffie@hannibal.wncc.cc.ne.us>
Date: Tue, 12 Jul 1994 00:09:36 -0600 (MDT)
To: netsig@tcet.unt.edu
Cc: mcduffie@hannibal.wncc.cc.ne.us
Message-ID: <Pine.3.89.9407120024.A3353-0100000@hannibal>
Rendered body type: text/plain

I am trying to track down a protocol problem between one of my users and
parts of the network. Below are two excerpts from my monitor screen.

The first shows the problem. ANG is a local TheNet (x1j2) node and the
station I'm trying to help is WD0BQM. His complaint was that when he used
my new user port, that must be accessed via another node, throughput was
much slower, instead of being faster. After watching it for awhile, I
could see why. Every time he received a data frame from the node, his tnc
would not ack it. Instead, it printed the data on his screen and waited
for the next supervisory poll from the node before acknowledging it.

In the following example, he has issued a B command to the node. The node
responds with the "Goodbye" data frame without the poll bit being set (the
^ indicates poll bit not set). He receives and prints the "Goodbye" on
his screen, but he doesn't ack it. Then, ANG polls him to see where he is
(RR1+) and is sent the proper ack (RR2-). At that point, ANG sends him
the disconnect frame and he acks it. This one at a time procedure happens
all the way through the data.

```
[1] fm ANG to WD0BQM ctl I11^ pid F0
ANG:AG0N-1} Goodbye.
[1] fm ANG to WD0BQM ctl RR1+
[1] fm WD0BQM to ANG ctl RR2-
[1] fm ANG to WD0BQM ctl DISC+
[1] fm WD0BQM to ANG ctl UA-
```

Contrast the above with the following excerpt on the same frequency.

The same station has connected to the BBS alias direct. He is sent the 0
data frame with poll bit set. He acks it immediately. Each time he sends
a command, he is sent the data with the poll bit set and things run
several times faster than above.

```
[1] fm WNBBS to WD0BQM ctl I00+ pid F0
[FBB-5.15-ABFHMR$]
Hello, Jim.
364 messages
#24763=last message
#24759=last listed

---> Testing new USER PORT!  Read notice.
(2) 03:32z A=364/L=24759/M=24763 >
[1] fm WD0BQM to WNBBS ctl RR1-
[1] fm WD0BQM to WNBBS ctl I10+ pid F0
f
[1] fm WNBBS to WD0BQM ctl RR1-
[1] fm WNBBS to WD0BQM ctl I11+ pid F0

You are now in "Server-mode". Type F <return> for BBS-mode again.

(2) SERVER-MENU (C,D,N,Q,T,F,B,?) >
[1] fm WD0BQM to WNBBS ctl RR2-


The obvious questions are...

Why are the nodes not setting the poll bit, thereby causing all these
delays for the user?  Should they be?  What can be done about it?  Is
there ANYTHING that I'm doing in the setup of X1j that is incorrect and
causing the problem.  I've been running nodes for a long time have not
noticed this before.  Maybe I was asleep all this time?

As I was typing the above questions, I wondered why I hadn't noticed this
problem myself.  I tried connecting (level 2) to the local node and
sending data frames to it and watching the response.  My data frames had
the poll bit set, the responses from the node did not, as above.  However,
my tnc acked the non-poll bit data frames from the node, where WD0BQM's
tnc did not.

Data:
 WD0BQM       is using a Tiny-2 with factory firmware
 WNBBS        is a DRSI card with BPQ4.07a running
 ANG:AG0N-1   is X1Jr2, as are the other two nodes tested

Any help someone might be able to provide would be appreciated.  I have
not tested with other stations to see exactly how they handle this
situation.  I will be doing so in the next few days.

Please send email replies to the address below.  Posting to the net is
also fine, but use the address below if you respond direct.

Thank you and 73,
Gary
mcduffie@hannibal.wncc.cc.ne.us
```

86. Re: Bit Regeneration

```
From: ahgroff@dz12.cca.rockwell.com (A.H.Groff)
Date: Tue, 12 Jul 94 09:06:00 CDT
To: netsig@tcet.unt.edu
Message-ID: <9407121406.AA11798@dz12.cca.rockwell.com>
Rendered body type: text/plain

>From: Adrian Godwin <agodwin@acorn.co.uk>
>
>> From: ahgroff@dz12.cca.rockwell.com (A.H.Groff)
>>
>> first i put the transmit side of the G3RUH style modem into the bit error
>> rate test mode ( all 0's before the scrambler ) and put modem transmit
>> output into the external modulation input of a direct FM signal generator
>> ( i.e. Motorola service monitor, etc ) . I then feed the output of the
>> service
>> monitor to the input of the receiver/modem demodultor under test.  I then
>
>I thought the G3RUH TX filter was intended to compensate for both the
>receiver and the transmitter signal paths, but you're ignoring the
>transmitter.
>
>After the procedure you descibe, I'd expect you to compensate the transmitter
>for minimum overall BER but this will only be possible if the transmitter
>can be compensated to look just like the service monitor .. is that correct ?

You are correct, I am using default TX compensation for my BER tests , on the
```

air.
Compensating a transmitter for receiver deficiencies may work on a
point to point link but in a mulituser environment it will only work if all
of the recevers have the same characteristic.
It has been my observation that it is more likely that transmitters are more
closely matched than receivers.

I can not claim that the service monitor exactly matchs the the typical
transmitter that we use in these parts, but it appears to be close.
The service monitor is quit flat from a about 10 hz to over 20 Khz. It is
usually very easy to verify that the transmitter is also flat and if not,
to modifiy it so that it is.

AL, K0VM

87. Poll bit question (pse help)

From: "Gary McDuffie, Sr." <mcduffie@hannibal.wncc.cc.ne.us>
Date: Tue, 12 Jul 1994 00:09:36 -0600 (MDT)
To: netsig@tcet.unt.edu
Cc: mcduffie@hannibal.wncc.cc.ne.us
Message-ID: <Pine.3.89.9407120024.A3353-0100000@hannibal>
Rendered body type: text/plain

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parts of the network. Below are two excerpts from my monitor screen.

The first shows the problem. ANG is a local TheNet (x1j2) node and the
station I'm trying to help is WD0BQM. His complaint was that when he used
my new user port, that must be accessed via another node, throughput was
much slower, instead of being faster. After watching it for awhile, I
could see why. Every time he received a data frame from the node, his tnc
would not ack it. Instead, it printed the data on his screen and waited
for the next supervisory poll from the node before acknowledging it.

In the following example, he has issued a B command to the node. The node
responds with the "Goodbye" data frame without the poll bit being set (the
^ indicates poll bit not set). He receives and prints the "Goodbye" on
his screen, but he doesn't ack it. Then, ANG polls him to see where he is
(RR1+) and is sent the proper ack (RR2-). At that point, ANG sends him
the disconnect frame and he acks it. This one at a time procedure happens
all the way through the data.

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ANG:AG0N-1} Goodbye.
[1] fm ANG to WD0BQM ctl RR1+
[1] fm WD0BQM to ANG ctl RR2-
[1] fm ANG to WD0BQM ctl DISC+
[1] fm WD0BQM to ANG ctl UA-
```

Contrast the above with the following excerpt on the same frequency.

The same station has connected to the BBS alias direct. He is sent the 0
data frame with poll bit set. He acks it immediately. Each time he sends
a command, he is sent the data with the poll bit set and things run
several times faster than above.

```
[1] fm WNBBS to WD0BQM ctl I00+ pid F0
[FBB-5.15-ABFHMR$]
Hello, Jim.
364 messages
#24763=last message
#24759=last listed

---> Testing new USER PORT!  Read notice.
(2) 03:32z A=364/L=24759/M=24763 >
[1] fm WD0BQM to WNBBS ctl RR1-
[1] fm WD0BQM to WNBBS ctl I10+ pid F0
f
[1] fm WNBBS to WD0BQM ctl RR1-
[1] fm WNBBS to WD0BQM ctl I11+ pid F0

You are now in "Server-mode". Type F <return> for BBS-mode again.

(2) SERVER-MENU (C,D,N,Q,T,F,B,?) >
[1] fm WD0BQM to WNBBS ctl RR2-
```

The obvious questions are...

Why are the nodes not setting the poll bit, thereby causing all these
delays for the user? Should they be? What can be done about it? Is
there ANYTHING that I'm doing in the setup of X1j that is incorrect and
causing the problem. I've been running nodes for a long time have not
noticed this before. Maybe I was asleep all this time?

As I was typing the above questions, I wondered why I hadn't noticed this
problem myself. I tried connecting (level 2) to the local node and
sending data frames to it and watching the response. My data frames had
the poll bit set, the responses from the node did not, as above. However,
my tnc acked the non-poll bit data frames from the node, where WD0BQM's
tnc did not.

Data:
 WD0BQM   is using a Tiny-2 with factory firmware
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 ANG:AG0N-1   is X1Jr2, as are the other two nodes tested

Any help someone might be able to provide would be appreciated. I have
not tested with other stations to see exactly how they handle this
situation. I will be doing so in the next few days.

Please send email replies to the address below. Posting to the net is
also fine, but use the address below if you respond direct.

Thank you and 73,
Gary
mcduffie@hannibal.wncc.cc.ne.us

88. RE: Poll bit question (pse help)

From: roberts@ses6a.bt.co.uk
Date: Wed, 13 Jul 1994 10:14:51 +0100
To: netsig@tcet.unt.edu
Message-ID: <9407130915.AA149307@tcet.unt.edu>
Rendered body type: text/plain

>From: NAME: Dave Roberts
        FUNC: DTI14
        TEL: 0473 224566   <ROBERTS AT A1 AT SES6A>
To: "netsig@tcet.unt.edu" @ R11F @ MRGATE

Interesting.

That's a part of the original code I have never touched in X1J.
As far as I know, (and I may be wrong) the basic idea is that
if you receive data, you ack it (after the appropriate delay
just in case there is an I frame you can piggy back on). If you
were to set the poll bit all the time, it would cause unnecessary
response frames to each poll that whilst it would give a faster
response would eat up air time.

It shouldn't happen though. It sounds like either the user has the
level 2 timers set wrong (you don't say what he is using) or
there is a bug in his implementation.

I *think* that BPQ does it a bit different in that after a set of
frames the poll bit gets set. Is this the case ? If so, it could
be implemented in a later TheNet version.

Check his setup first. A data frame should solicit a response with
or without the poll bit set. The poll bit says "did you get that ?
Are you still there ? I haven't had a response from you ". The
users code should ack the data frame regardless of the poll bit.

73's

Dave G8KBB

89. Re: Poll bit question (pse help)

From: djk@dirku.demon.co.uk (Dirk-Jan Koopman)
Date: Wed, 13 Jul 1994 10:47:21 +0200 (BST)
To: netsig@tcet.unt.edu
Message-ID: <m0qO0uP-0004gAC@dirku>
Rendered body type: text/plain

>
> From: "Gary McDuffie, Sr." <mcduffie@hannibal.wncc.cc.ne.us>
> Subject: Poll bit question (pse help)
> To: netsig@tcet.unt.edu

> Date: Tue, 12 Jul 1994 00:09:36 -0600 (MDT)
>
> [stuff deleted]
>
> [1] fm ANG to WD0BQM ctl I11^ pid F0
> ANG:AG0N-1} Goodbye.
> [1] fm ANG to WD0BQM ctl RR1+
> [1] fm WD0BQM to ANG ctl RR2-
> [1] fm ANG to WD0BQM ctl DISC+
> [1] fm WD0BQM to ANG ctl UA-
>

[Stuff deleted]

> [1] fm WNBBS to WD0BQM ctl I00+ pid F0
> [FBB-5.15-ABFHMR$]
> Hello, Jim.
> 364 messages
> #24763=last message
> #24759=last listed
>
> ---> Testing new USER PORT! Read notice.
> (2) 03:32z A=364/L=24759/M=24763 >
> [1] fm WD0BQM to WNBBS ctl RR1-
> [1] fm WD0BQM to WNBBS ctl I10+ pid F0
> f
> [1] fm WNBBS to WD0BQM ctl RR1-
> [1] fm WNBBS to WD0BQM ctl I11+ pid F0
>
> You are now in "Server-mode". Type F <return> for BBS-mode again.
>
> (2) SERVER-MENU (C,D,N,Q,T,F,B,?) >
> [1] fm WD0BQM to WNBBS ctl RR2-
>

x1j1 is a pure layered stack. It doesn't set the poll bit on the last
frame (like BPQ does) because it doesn't know when the last frame is
physically being sent - it merely queues the outgoing frames for
transmission.

BPQ (on the other hand) is not so purely layered and has "frame finished
being sent" callback logic in it. This allow BPQ to send windowsize - 1
frames with no poll bit and the last frame with a poll bit AND still be
efficient, taking into account the frames to be sent out on that queue.

The poll bit is only really useful on half duplex systems. It is also
not the problem (I just thought I'd try and explain the difference
between the two behaviours).

The real question is "why is the Tiny-2 not acking the I frame". The
probable answer is a node FRACK and tnc RESPTIME conflict. I imagine
that the FRACK and RESPTIME are set so that they are nearly the same or
the RESPTIME is set higher than the node's FRACK.

73 Dirk G1TLH

90. Computer Based node

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Sat, 16 Jul 1994 14:48:46 -0600 (MDT)
To: Sig Networking <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9407161428.A15313-0100000@kazak>
Rendered body type: text/plain

A week or 2 ago I talked about building a computer that would
be for a mountaintop packet radio node. I guessed at the prices
for this computer and several guys told me things can be purchased
for less money on the west coast. I just got a copy of
ComputerEdge from San Diego and looked at the computer sales
pages. Here is what I would buy to do the job with brand new
components!

     From PC Club (619) 277-8151 or fax 227-8508, I will get a
486slc-33mhz motherboard with cpu for $79.00 and a TEAK 1.44
Mbyte/3.5" floppy drive for $35.00. This means I get the basic
computer from here for $104.00.

     From Compu-Time (619) 268-8856 FAX 268-4865, I will buy a 486
IDE 2HD/2FD with I/O VLB 16 bit controller card for $12.00 and the
MGP Card w/P Port video card for $10.00 and a Mini Tower case with

200 watt power supply for $35.00. This is a $52.00 purchase.

     From Chip Merchant (619) 268-4774 fax 268-0874, I will buy a
1 meg simm 70 nansec for $35.75.

     So the complete hilltop 486 computer will cost $191.75!
Shipping cost will make it about $200.00 for the components to be
in your home.

     Now since I have a keyboard I can use and a amber 12" monitor
I can just take these to the hill when I need to do some service
on the equipment.

     So put the motherboard controller card, video card and 3.5"
floppy into the Case and connect the wires. The 2 plugs that go
onto the motherboard must have the black wire in each plug next to
each other. Hook the power to the motherboard before you mount the
motherboard. Hook the floppy up so it will be the a: floppy.

     Turn on the computer and stop it in the AMI Bios mode. setup
so the time is right and only the a: floppy is present. Also set
it so it doesn't need a keyboard present.

     Now put the floppy into the drive a: which has dos or linux
operating system on it with nos or the G8BPQ switch and other
software you will need. You have 2 com ports you can use and 2
printer parallel ports as well. If you mount a DRSI card into the
computer you have whatever that gives you...

     These prices are accurate and timely. If this looks good to
you then glad I can be of help.

73, de karl k5di@k5di.nm.usa.na

91. Re: Computer Based node

From: bruce@pixar.com (Bruce Perens)
Date: Sat, 16 Jul 94 15:18 PDT
To: bruce@pixar.com,
        "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <m0qPI4R-0006J1C@mongo.pixar.com>
Rendered body type: text/plain

Karl,

You need to add SIMMS to 32-bit motherboards in banks of 4. Thus,
you should get 4 256k SIMMS or 4 1MB SIMMS.
Some of the 386SX motherboards would take 2 at a time, but I don't
think this is the case for any 486.

The SIMMS are 9 bits wide (8 data plus parity). You need 32 data bits
plus 4 parity bits, because it's a 32-bit memory bus. Thus, you must
add SIMMS in banks of four.
If it's a mountaintop station, I'd suggest you have some means of
remotely resetting the computer - perhaps through a touch-tone command?

        Bruce Perens

92. Re: Computer Based node

From: DJ Gregor <dgregor@bronze.coil.com>
Date: Sat, 16 Jul 1994 19:25:07 -0400 (EDT)
To: netsig@tcet.unt.edu
Message-ID: <199407162325.TAA14295@bronze.coil.com>
Rendered body type: text/plain

>
>   From Chip Merchant (619) 268-4774 fax 268-0874, I will buy a
> 1 meg simm 70 nansec for $35.75.
>

You CANNOT! by just one SIMM. 486s have external 32 bit data busses, which
means that you have to install SIMMS in multiples of four, or buy an 36 bit
SIMM (4 bits for parity checking, 1 on each byte). But, since you have a
motherboard that is equivilant to a 486SX, which only has a 16 bit external
data bus, you need to install SIMMs in multiples of two.

DJ Gregor, N8QLB
dgregor@bronze.coil.com
"...oh, you use DOS, sorry to hear that..."

Try Linux, it's AWESOME!!! (check out sunsite.unc.edu in /pub/Linux)

93. Re: Computer Based node

From: ka7oei@uugate.wa7slg.ampr.org
Date: Sat, 16 Jul 94 23:30:03 mdt
To: netsig@tcet.unt.edu
Message-ID: <93600@uugate.wa7slg.ampr.org>
Rendered body type: text/plain

For any PC that will be unattended for long periods of time, I'd make sure that you also had 1 or 2 extra cooling fans. Mount another one on the back of the PC (using a *good* fan... DO NOT use a sleeve bearing fan!!! One of those ball bearing or "hydro-wave" fans from Digi-Key would work.)

Also, you will want to keep the airflow from being pulled through the floppy drives. You will probably want to attach (velcro or tape) a cover over it. This will keep dust (abrasive, dirty) from being pulled through the high-tolerance parts.

Finally, I can't imaging not having a watchdog timer (perhaps keyed from the PTT) on this thing...

<Clint>

Internet: clint@uugate.wa7slg.ampr.org
Amprnet: ka7oei@uugate.wa7slg.ampr.org

94. BPQ+NOS Switch

From: Sperry Davis <sperry@pinn.net>
Date: Sun, 17 Jul 1994 14:33:15 -0500 (EST)
To: netsig@tcet.unt.edu
Message-ID: <Pine.3.89.9407171438.A27828-0100000@everest>
Rendered body type: text/plain

Hello to all, I am rather new to this list, having read it for several weeks now, thought I would throw out a question,

  I have been running a six port G8BPQ switch for several years utilizing kiss tncs to two 9600 baud radios, one 1200 baud radio and a pair of wire links to outlying nodes. Serial ports are all 16550 type uarts, a STB-4com and a standard AT style i/o card.
  Traffic through the switch is a good mix of ax25, netrom, and tcp/ip. The switch utilizes g8bpq's ipgate for the ip traffic, works real well.
  I am running DesqView and usually 7 windows, the main one is a program ingesting NWS weather data from a GTE satellite downlink. Other sessions consist of three copies of a menu driven program for packet users to access the NWS products, the ipgate prgm, the sysop prgm, and term4.
  The switch is _very_ stable, it has run for up to a year with no problems. Uses dos ver 5, qemm 6.0, desqview 2.41, hyperdisk, bpq4.07a.

  The problem is... I have been trying to compile a stable copy of nos to run along with the switch to provide smtp forwarding of NWS messages.
  My latest attempt is jnos110f with n5faz's bpq host interface (1.4) with most everything removed except tcp/ip services. Thought I finally had something workable, but alas the switch is down and cannot be reset till monday morning, though it has been known to restart. When I last checked, nos had plenty of memory and was going for a record, it was nearing 48 hours of uptime.. forwarding was working great.

  Any suggentions for configuring a stable bpq/desqview/nos high traffic switch would be appreciated.

Sperry/n4sd
  PBBS: N4SD@WD4MIZ.#TIDE.VA.USA.NOAM   IP ADDRESS: [44.62.64.40]
  Compuserve: Sperry Davis(70473,3316)   InterNet: sperry@pinn.net

95. Re: BPQ+NOS Switch

From: ron@chaos.eng.wayne.edu (Ron Atkinson N8FOW)
Date: Sun, 17 Jul 94 18:32:27 EDT
To: netsig@tcet.unt.edu
Message-ID: <9407172232.AA06307@chaos.NIS.chaos>
Rendered body type: text/plain

> The problem is... I have been trying to compile a stable copy of nos to

> My latest attempt is jnos110f with n5faz's bpq host interface (1.4)
>with most everything removed except tcp/ip services. Thought I finally

>had something workable, but alas the switch is down and cannot be reset
>till monday morning, though it has been known to restart. When I last
>checked, nos had plenty of memory and was going for a record, it was
>nearing 48 hours of uptime.. forwarding was working great.

Usually if not much is put in it or not many servers are included, it
should run ok. But if put under a heavy load it'll crash and burn.
Lots of people have the same problem as you, that's why you see so many
people put timed execution to restart NOS or have hardware reset circuits
to reboot the computer if it crashes.

     If possible, try to compile in the stktrace code and put a copy of
the nos.map file in the same directory as the executable. Hopefully if
the program crashes it might generate a stktrace.out file on your drive
and give some kind of idication as to what's going on. I've seen all
kinds of mbuf, ip_route, tmp file, etc... errors show up in my file. Seems
it's always the same thing showing up over and over again.   Due to
excessive problems, for remote systems and in-house playing around, I
switched from JNOS 1.10 series to WA3DSP 1.08dfd code. I'm now messing
with MFNOS again to see if it's more stable. My home system runs JNOS
for Linux (Alpha 4 version by KF8NH) and it's the most stable version of
NOS that I have. MFNOS and DSP's version are also a whole lot more
stable, try switching to one of those for a while and see if it works
better.

Ron N8FOW

96. Re: BPQ+NOS Switch

From: goobie@cfcsc.dnd.ca
Date: Sun, 17 Jul 1994 23:45:45 -0400 (EDT)
To: netsig@tcet.unt.edu
Message-ID: <199407180345.AA19825@bishop>
Rendered body type: text/plain

==>
==> I have been running a six port G8BPQ switch for several years utilizing
==>kiss tncs to two 9600 baud radios, one 1200 baud radio and a pair of wire
==>links to outlying nodes. Serial ports are all 16550 type uarts, a
==>STB-4com and a standard AT style i/o card.
==> Traffic through the switch is a good mix of ax25, netrom, and tcp/ip.
==>The switch utilizes g8bpq's ipgate for the ip traffic, works real well.
==> I am running DesqView and usually 7 windows, the main one is a program
==>ingesting NWS weather data from a GTE satellite downlink. Other sessions
==>consist of three copies of a menu driven program for packet users to
==>access the NWS products, the ipgate prgm, the sysop prgm, and term4.
==> The switch is _very_ stable, it has run for up to a year with no problems.
==>Uses dos ver 5, qemm 6.0, desqview 2.41, hyperdisk, bpq4.07a.

I was having the same problem.. I was running jnos 1.10d and bpq 4.07a My
problems disappeared when I regressed back a version of bpq to 4.06k.. My
research tells me that BPQ did rewrite the host mode interface when he went to
the 4.07a version. I have had the setup running for several days now and it
si excellent..   It would appear that the authors of BPQ and JNOS will need to
exchange some notes.

Cheers
Keith VE3OY @ VA3BBS
ve3oy@ve3oy.ampr.org

--

Keith Goobie	goobie@cfcsc.dnd.ca
SO2 ADP - CFCSC, Toronto, ON CANADA	>>> If you come to a fork in
(416)-482-6807 FAX (416)-482-6908	the road, take it <<<

97. Re: BPQ+NOS Switch

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Mon, 18 Jul 1994 07:21:10 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9407180700.A12917-0100000@kazak>
Rendered body type: text/plain

On Sun, 17 Jul 1994, TAPR Network Special Interest Group wrote:

> From: Sperry Davis <sperry@pinn.net>
> Subject: BPQ+NOS Switch
> To: netsig@tcet.unt.edu
> Date: Sun, 17 Jul 1994 14:33:15 -0500 (EST)

>
>   Hello to all, I am rather new to this list, having read it for several
> weeks now, thought I would throw out a question,
>
>   I have been running a six port G8BPQ switch for several years utilizing
> kiss tncs to two 9600 baud radios, one 1200 baud radio and a pair of wire
> links to outlying nodes. Serial ports are all 16550 type uarts, a
> STB-4com and a standard AT style i/o card.>   The switch is _very_ stable, it has run for up to a year
 with no problems.
>   BPQ ^^^   ^^^^^^^^^^^^^^^

Uses dos ver 5, qemm 6.0, desqview 2.41, hyperdisk, bpq4.07a.
>
>   The problem is... I have been trying to compile a stable copy of nos to
> run along with the switch to provide smtp forwarding of NWS messages.
> checked, nos had plenty of memory and was going for a record, it was
> nearing 48 hours of uptime.. forwarding was working great.
         ^^^^^^^^^^^^^^^^^^

        Sperry is having the same experiance all of us have had when
running the BPQ switch for YEARS without failure and then trying NOS. I
hear of guys like Berry in Canada that have NOS running for at least
months without a crash, but I have never seen it myself.

        The NMSUGW and all the F6CNB NOS systems that I use to forward
thru for my bbs and ftp and smtp thru are lucky to make it for 2 days
without a crash. It is so unstable that the sysop for NMSUGW is building
a telephone actuated compter hard reset system! Tim is tired of driving
to school every day on vacation!!!

        This is actual experiance. Does anyone have experiance with high
volume traffic thru NOS that is stable? Speak up now or stop thinking
about NOS as the answer to the new networks. It IS neat software and I
run it as my fun thing, but not as a server for a busy node.

-karl k5di

98. Re: Computer Based node

From: dkelly@nebula.tbe.com (david kelly)
Date: Mon, 18 Jul 94 09:02:26 -0500
To: netsig@tcet.unt.edu
Message-ID: <9407181402.AA22893@nebula.tbe.com>
Rendered body type: text/plain

>   From Chip Merchant (619) 268-4774 fax 268-0874, I will buy a
> 1 meg simm 70 nansec for $35.75.

Really? The 486slc-33mhz motherboard will run with a single SIMM?
I think not. A commodity PC MB will use 8 (or 9) bit SIMMs and require
16 or 32 bit wide memory (one 486 clone uses 16 bit memory, "real" 486's
require 32 bit memory).

Chip Merchant does sell 32 bit wide SIMMs for the newer Macintoshs and
PowerPC Macintoshs. The price is similar per megabyte to 8 bit parts.

You really should add a hard drive to the system as a hard drive is more
reliable than a floppy. The floppy may only be used at boot if you run
G8BPQ but you would be losing many of the great reasons for running Linux
if you cripple it by not including a hard drive.

Its fairly easy to run out of memory in Linux with only 4M, so enabling
swapper is mandatory. As with any U**x system, more memory will make the
machine run faster, up to a point. In my experience, Linux without X, the
threshold is 8M. A 16M system will be faster, but not so obvious.

But this digresses from the subject of "cheap box with new parts". My
point is that you really need more memory which will inflate your prices
by either $35 or $105, and its pretty hard to buy 256k SIMMs to get "only"
a 1M machine these days.

73, David N4HHE
dkelly@nebula.tbe.com

99. Re: Computer Based node

From: Greg Jones <gjones@tenet.edu>
Date: Mon, 18 Jul 1994 09:57:27 -0500 (CDT)
To: netsig@tcet.unt.edu
Message-ID: <199407181457.JAA19920@Kay-Abernathy.tenet.edu>
Rendered body type: text/plain

According to TAPR Network Special Interest Group:
> From: dkelly@nebula.tbe.com (david kelly)
> Subject: Re: Computer Based node
> To: netsig@tcet.unt.edu
> Date: Mon, 18 Jul 94 09:02:26 -0500
>
> You really should add a hard drive to the system as a hard drive is more
> reliable than a floppy. The floppy may only be used at boot if you run
> G8BPQ but you would be losing many of the great reasons for running Linux
> if you cripple it by not including a hard drive.

Depending where you plan on operating the PC, you might have problems.
Harddrive and floppies both have temperature limits.

I remember reading someplace about someone doing testing on floppys for
remote operations in uncontrolled temperature environments. That floppys
formatted at one temperature had trouble being read when the temperature
changed XX degrees. Also, data written at one temperature was sometime not
readable at another temperature. Maybe this was with older drives.

Also - IDE drives, which seem to be more and more common, have a upper limit
on temperature. I have run older MMF drives in remote sites for years and
the weather changes in North Texas eventually get them after several years,
but I have heard some rather uncomfortable reports concerning IDE drives. I
don't think I would put an IDE drive in an uncontroller environment.

Using PC's in remote locations is are becoming much more fesilble with the cost
drop over the last few years and the fact that you can run most of the newer
boards from a regular +12/+5 supply...thus you don't have problems with the
powersupply that are typically provided for home use...which have problems
again in uncontrolled temperature situations.

Cheers - Greg

100. RE: BPQ+NOS Switch

From: "Ackermann, John" <jra@lawdept.daytonoh.NCR.COM>
Date: Mon Jul 18 12:07 EDT 1994
To: 'NETSIG Mailing List' <netsig@tcet.unt.edu>
Message-ID: <2E2A9AE0@wasp.daytonoh.ncr.com>
Rendered body type: text/plain

Karl wrote:

        Sperry is having the same experiance all of us have had when
running the BPQ switch for YEARS without failure and then trying NOS. I
hear of guys like Berry in Canada that have NOS running for at least
months without a crash, but I have never seen it myself.

        The NMSUGW and all the F6CNB NOS systems that I use to forward
thru for my bbs and ftp and smtp thru are lucky to make it for 2 days
without a crash. It is so unstable that the sysop for NMSUGW is building
a telephone actuated compter hard reset system! Tim is tired of driving
to school every day on vacation!!!

        This is actual experiance. Does anyone have experiance with high
volume traffic thru NOS that is stable? Speak up now or stop thinking
about NOS as the answer to the new networks. It IS neat software and I
run it as my fun thing, but not as a server for a busy node.

Our experience is that NOS <as a switch> is extremely stable. It's when you
start adding other stuff beyond the routing functions that reliability goes
down. Our main switch site supports a 19.2kB repeater that is extremely
busy, and two 1200 ports. Given the activity on the repeater, it probably
sees as many packets per day as most switches, even though the port count is
not high.

Anyway, it has run for weeks at a time without crashing. We recently put a
daily reset timer on the packet station, but that was only because of a
mysterious power supply crowbar problem and has nothing to do with the
reliability of NOS..

Similarly, I used to run a JNOS window under Desqview that had a PI card
running at 19.2kB, a 1200 baud port, and an ethernet port. It served as a
router from the radio world to my Unix box. It ran weeks at a time without
reboot. Now, I run JNOS/Linux in an xterm window to provide the same
function, and it's been up for over 20 days at a time.

It's when you start to add other stuff -- in particular, the message

handling stuff -- to a busy switch that crashes become more likely. My
guess is that at least part of the problem is that when the disk is active
interrupts are off -- and the BBS code is extremely disk intensive. That
requires lots of use of nibufs and other tricks, which results in memory
fragmentation and other Bad Things that lead to crashes.

The successful NOS systems have separated the switch functions from the BBS
ones by using multiple machines. An all-purpose NOS
switch-bbs-convers-smtp-pop-ftp server is just asking one machine running a
single tasking operating system to do too much.

John

101. NOS as a switch (was RE: BPQ+NOS Switch)

From: Tim Baggett <wbaggett@NMSU.edu>
Date: Mon, 18 Jul 1994 10:30:44 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.87.9407181043.D26005-0100000@gauss>
Rendered body type: text/plain

On Mon, 18 Jul 1994, TAPR Network Special Interest Group wrote:

> From: "Ackermann, John" <jra@lawdept.daytonoh.NCR.COM>
> Subject: RE: BPQ+NOS Switch
> To: 'NETSIG Mailing List' <netsig@tcet.unt.edu>
> Date: Mon Jul 18 12:07 EDT 1994
>
>
> ------------------------
> Our experience is that NOS <as a switch> is extremely stable. It's when you
> start adding other stuff beyond the routing functions that reliability goes

Yeah, I agree John. Actually I have two machines on the gateway here. The
first one is a router only, and acts as a firewall security system from
AMPRNET to Internet. This system has gotten extremely stable. So stable
in fact it has operated for nearly a month at times without being
rebooted. I usually reboot the system only so new gateway routing tables
take effect! The machine happily sits around right on the 10 Mbs ethernet
as a FTP site and shoots out data fast!

>
> It's when you start to add other stuff -- in particular, the message
> handling stuff -- to a busy switch that crashes become more likely. My
> guess is that at least part of the problem is that when the disk is active
> interrupts are off -- and the BBS code is extremely disk intensive. That
> requires lots of use of nibufs and other tricks, which results in memory
> fragmentation and other Bad Things that lead to crashes.

Yep.
The other machine is connected to the first one described by another
ethernet card. It also has a PI2 card and runs a 9600 bps port on the
radio. The system runs: MBOX (no 'stinken' PBBS functions), CONVERS,
AX25, AXIP, NETROM, SMTP, FTP, TELNET, and that should about include it
all. It does not run BPQ. This system does crash regularly and is always
sluggish. It is running 1.10D now and that seems to help some. Yesterday
in a 12 hour period the system had 30 logins with 18 different users. I
don't know how that useage stacks up with other gateways, but I do think
it shows that JNOS as a TCP/IP switch is stable, but all the other hacked
in protocols bog it down too much. I hope to allieviate (sp?) some of the
problem by moving to Linux.

>
> The successful NOS systems have separated the switch functions from the BBS
> ones by using multiple machines. An all-purpose NOS
> switch-bbs-convers-smtp-pop-ftp server is just asking one machine running a
> single tasking operating system to do too much.

Any suggestions on spliting up network functions among these two
machines? I think I've got the functions split up among the two systems
best I can, but maybe someone has better ideas?

I know this may actually fit better on NOS-BBS or the gateways mail list,
but there seems to be a lot of people trying to crowbar a lot of
functions into a network using JNOS, so there may be some interest on
this list as well.

73
Tim

(BTW John, any luck with JNOS40 for the Dataengine? Still using BPQ on
our DE here - finally got it VERY stable, and scared to touch it :-)

****
Tim Baggett, AA5DF   Electrical Engineering Student
                                      New Mexico State University
Internet: WBAGGETT@NMSU.EDU
AMPR: AA5DF@NMSUGW.AMPR.ORG   US Snail: 1805 Rentfrow Apt #1
(When on) AA5DF.AMPR.ORG   Las Cruces, NM 88001
****

102. Re: Computer Based node

From: Tim Baggett <wbaggett@NMSU.edu>
Date: Mon, 18 Jul 1994 14:19:49 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.87.9407181449.E27996-0100000@gauss>
Rendered body type: text/plain

On Sun, 17 Jul 1994, TAPR Network Special Interest Group wrote:

> From: ka7oei@uugate.wa7slg.ampr.org

>
> Finally, I can't imaging not having a watchdog timer (perhaps keyed from the
> PTT) on this thing...
>
> <Clint>

Maybe I should point out that there has been an interesting use of DTMF
decoders from the commercial world into the ham world. A guy in San
Antonio has modified the Cetec Vega 'horn honker' thing-a-ma-jig to reset
gateways. I'm not sure exactly what they are called, but they are used in
mobile systems so that when an incomming call (via radio) comes in and
the person is not around, the calling party can key in a 6 digit DTMF
code. The gizmo decodes the DTMF code and honks the cars horn to get your
attention (yeah, weird I know!)

I'm gonna help him fix it up some more, and get with him to release some
of the technical information. I think these things can be a great use on
gateways especially! (Lee, are you out there? Maybe we can talk John into
making this public?)

73
Tim

****
Tim Baggett, AA5DF   Electrical Engineering Student
                                      New Mexico State University
Internet: WBAGGETT@NMSU.EDU
AMPR: AA5DF@NMSUGW.AMPR.ORG   US Snail: 1805 Rentfrow Apt #1
(When on) AA5DF.AMPR.ORG   Las Cruces, NM 88001
****

103. Re: NOS as a switch (was RE: BPQ+NOS Switch)

From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
Date: Mon, 18 Jul 94 14:50:04 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <9407181450.ZM15475@hanko>
Rendered body type: text/plain

On Jul 18, 4:18pm, TAPR Network Special Interest Group wrote:
> Subject: NOS as a switch (was RE: BPQ+NOS Switch)
> From: Tim Baggett <wbaggett@NMSU.edu>
> Subject: NOS as a switch (was RE: BPQ+NOS Switch)
> To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
> Date: Mon, 18 Jul 1994 10:30:44 -0600 (MDT)
>
> On Mon, 18 Jul 1994, TAPR Network Special Interest Group wrote:
>
> > From: "Ackermann, John" <jra@lawdept.daytonoh.NCR.COM>
> > Subject: RE: BPQ+NOS Switch
> > To: 'NETSIG Mailing List' <netsig@tcet.unt.edu>
> > Date: Mon Jul 18 12:07 EDT 1994
> >
> >
> > ------------------------

> > Our experience is that NOS <as a switch> is extremely stable. It's when
you
> > start adding other stuff beyond the routing functions that reliability goes

> The other machine is connected to the first one described by another
> ethernet card. It also has a PI2 card and runs a 9600 bps port on the
> radio. The system runs: MBOX (no 'stinken' PBBS functions), CONVERS,
> AX25, AXIP, NETROM, SMTP, FTP, TELNET, and that should about include it
> all. It does not run BPQ. This system does crash regularly and is always
> sluggish. It is running 1.10D now and that seems to help some. Yesterday
> in a 12 hour period the system had 30 logins with 18 different users. I
> don't know how that useage stacks up with other gateways, but I do think
> it shows that JNOS as a TCP/IP switch is stable, but all the other hacked
> in protocols bog it down too much. I hope to allieviate (sp?) some of the
> problem by moving to Linux.

Just HAD to comment on this thread!

My machine at home runs 6 radios (two at 9600, 3 at 1200, one
HF CLOVER system), and has an ethernet link to another machine.
It is a 386DX-25 with 8M memory. Runs a "full-up" BBS, SAM callsign
datebase lookup server, chat server, FT (ftp clone), a network monitoring
program, and probably a couple servers that I forgot about.

Under normal conditions the machine will stay up for several weeks
to several months without attention. It occasionally is crashed by
power hits (the famous "breaker didn't reset" problem).

Of course it will crash now and again while I'm working on the bbs code,
but when I'm not working on the code, and the electricity continues to flow
down the power lines, it continues to run "forever".

30 logins in a 12 hour period is TINY! I see more like 30 per hour,
24 hours per day, 7 days per week. I'm one machine on our network.
There are half a dozen others in the Portland metro area that support
the same level of use.

Yes, it's all NET/ROM networking (even over the ethernet) ...
and yes it works just fine ... and yes there are a lot of users.

My point is that NOS has to get AT LEAST to this level of reliability
before it can make any impact on the existing network.

Would we rather have xrn instead of BBS bulletins? You bet!
But there is no existing NOS implementation that even comes close
to supporting what the users demand. Yes, we DO have a number of
NOS systems in the area (WG7J used to live right down the road a bit),
and they just don't collect the users. Why? They don't provide the
services the users want, and they don't stay up.

What's my message here? If tcp/ip is going to become useful, the folks
working on the code need to pay a lot more attention to what users
want, and need to solve the crash problems.

Since NOS has not accomplished these things in (approx) 11 years of
trying, I had hoped that this group would focus on things that might
actually help our existing network. What things? Better implementations
of NET/ROM perhaps. An open implementation (i.e. source code)
for (at least) MS-DOS machines as starter kit for those of us who
might play around with networking ideas. No, don't bother to tell me
about the NOS code for NET/ROM. I've looked at it. It's not very useful
outside of NOS itself - assuming it was even possible to excise it out
of the rest of the "NOS tangle".

So folks how about a very simplified sockets package running over
NET/ROM for example? How about chopping the NET/ROM code out of
one version of NOS or another, making it reasonably modular, and
giving folks a start point for protocol experimentation?

How about some information from your experience setting up NET/ROM
networks. What parameters work in what situations? How about a bug
list for the various versions of the G8BPQ switch?

--

Hank Oredson @ Mentor Graphics   Library Operations
Internet   : hank_oredson@mentorg.com   "Parts 'R Us!"
Amateur Radio: W0RLI@W0RLI.OR.USA.NOAM

104. Re: Nos as a Switch.

From: wb9mjn@k9vxw.ampr.org.
Date: Mon, 18 Jul 94 23:28:46 UTC
To: netsig@tcet.unt.edu
Message-ID: <9407190516.AA192447@tcet.unt.edu>
Rendered body type: text/plain

Hi. Once again Hank has pulled me out of the woodwork, hi.

  In Anthropology class, we learned about "Island Evolution". This is evolution that occurs in an isolated area. Sometimes it leads species down a path of such specialization, that these animals cannot exist anywhere else but in that one area. I think Hank's attitude toward BBSs and Nodes puts Ham Packet at risk to become one such specie. Well, i shouldn t say it that way. Hi. But what i mean, is that we can t have as a narrow a focus as this. I ve personally sent messages to one other BBS programmer, who s system started this BBS as NETWORK hub malarky, as well.

  Hank, u have a fine system, but u can t honestly believe ur system has the same speed , doing all it has to, as a piece of hardware specifically designed to do the Switch task, as fast as possible ? In my experience, not so much with the G8BPQ, but with the other BBS system that foists itself off as a network switch, its apparent these things have miserably low capacity to get date xxxx data from one port to the other. I guess people just don t notice this because they are using KISS tncs. Which are also misreably slow compared to something running DMA right to the modem port.

  A reliable version of NOS has been available since 1989. In the Gracilis PacketTEN switch. These things run for months and months, usually till a power glitch , or failure. Yes, they are doing the switch function only, and use the thruput they have to remotely access any disk based services. Don Lemley, N4PCR has done a great job making NOS practical. But, P10s are not produced in enuf quantities to impact much of Ham Packet Radio. That s probably not his fault. U probably can guess from the beginning of this message where i think the shortsightedness lays, hi.

 If we build a network of switches that can t keep up with even the thruputs available on CSMA 9600 baud backbone links, what use is it ? That doesn t mean G8BPQ with KISS tncs doesn t work. Its just that half the thruput is wasted in the KISS TNC. Combined with CSMA effects, that puts ur expensive 9600 baud equipment down to the capacity of the continuously transmitting 1200 baud TNC. And even at that rate, the typical BBS based network hub is going to have a hard time keeping 3 ports charged, when it has to grind thru its mail file, for whatever reason.

 BBS s should hang off switches. Either by radio links, or wire links. NEVER NEVER NEVER, should a network path go THRU a BBS computer. Only thru hardware specifically designed for the switch task, that is not doing ANY server functions whatsoever.

 If this is not the case, the end result can only be the type of network Hank describes to us. Because there wont be enuf thruput to do anything else.

73, Don

wb9mjn@uugate.wa7slg.ampr.org

105. Re: NOS as a switch (was RE: BPQ+NOS Switch)

From: Tim Baggett <wbaggett@NMSU.edu>
Date: Mon, 18 Jul 1994 23:06:10 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.87.9407182309.B1912-0100000@gauss>
Rendered body type: text/plain

On Mon, 18 Jul 1994, TAPR Network Special Interest Group wrote:

> From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
> Subject: Re: NOS as a switch (was RE: BPQ+NOS Switch)
> To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
> Date: Mon, 18 Jul 94 14:50:04 PDT
>
>
> Just HAD to comment on this thread!
>
> My machine at home runs 6 radios (two at 9600, 3 at 1200, one
> HF CLOVER system), and has an ethernet link to another machine.
> It is a 386DX-25 with 8M memory. Runs a "full-up" BBS, SAM callsign
> datebase lookup server, chat server, FT (ftp clone), a network monitoring

> program, and probably a couple servers that I forgot about.
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> to several months without attention. It occasionally is crashed by
> power hits (the famous "breaker didn't reset" problem).
>
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> but when I'm not working on the code, and the electricity continues to flow
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>
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> 24 hours per day, 7 days per week. I'm one machine on our network.
> There are half a dozen others in the Portland metro area that support
> the same level of use.
>
> Yes, it's all NET/ROM networking (even over the ethernet) ...
> and yes it works just fine ... and yes there are a lot of users.
>
> My point is that NOS has to get AT LEAST to this level of reliability
> before it can make any impact on the existing network.

Wow, that IS stability. But Hank, you failed to mention what it is you
are using. From your comments I suspect that it is not NOS. Is it a PBBS?
If so, what good does it do to a network? I think of PBBS's as
applications and do nothing at the OSI netwrk lower layers (boy, this
comment oughta really ruffle those feathers :-)

>
> Would we rather have xrn instead of BBS bulletins? You bet!
> But there is no existing NOS implementation that even comes close
> to supporting what the users demand. Yes, we DO have a number of
> NOS systems in the area (WG7J used to live right down the road a bit),
> and they just don't collect the users. Why? They don't provide the
> services the users want, and they don't stay up.

Again, most JNOS gateways, although they do provide a lot of services,
are mainly network packages. Unstable, yeah, I agree, and that sucks.
Anyone with suggestions to improve stability can email me!

> Since NOS has not accomplished these things in (approx) 11 years of
> trying, I had hoped that this group would focus on things that might
> actually help our existing network. What things? Better implementations
> of NET/ROM perhaps.   ^^^^^^^^^^^^^^^^^^^^^
  ^^^^^^^^^^^^^^^^^^

AAAAAACCCCCCCCCCKKKKKKKKKKKKK!!!!!!!!! I hope you forgot a smiley in
there ;-)

I see no possible way that NET/ROM will ever be the packet radio
networking protocol of the future. It was good when it came out, is
almost worthwhile now, and I bet in a few years when we start to increase
connectivity across the counrty even more, NET/ROM will become more of a
pain in the %$# than a protocol. It already is on the gateways.

>
> So folks how about a very simplified sockets package running over
> NET/ROM for example? How about chopping the NET/ROM code out of
> one version of NOS or another, making it reasonably modular, and
> giving folks a start point for protocol experimentation?
>
> How about some information from your experience setting up NET/ROM
> What's my message here? If tcp/ip is going to become useful, the folks
> working on the code need to pay a lot more attention to what users
> want, and need to solve the crash problems.
>

I definatly agree here. NOS is primarily experimental for the most part.
Maybe we need a good stable, user friendly NOS that is bare bones
networking and has lots of good user applications.

73
Tim

****
Tim Baggett, AA5DF   Electrical Engineering Student
                                      New Mexico State University

Internet: WBAGGETT@NMSU.EDU
AMPR: AA5DF@NMSUGW.AMPR.ORG   US Snail: 1805 Rentfrow Apt #1

(When on) AA5DF.AMPR.ORG   Las Cruces, NM 88001
****

106. Re: BPQ+NOS Switch

From: dreamer@lhaven.UUmh.Ab.Ca (Lawrence *The Dreamer* Chen)
Date: Mon, 18 Jul 1994 11:32:12 -0400
To: netsig@tcet.unt.edu
Message-ID: <9407181532.5ocy@lhaven.UUmh.Ab.Ca>
Rendered body type: text/plain

Hi TAPR (TAPR Network Special Interest Group), in <9407172209.AA136944@tcet.unt.edu> on Jul 17 you wrote:

>   I have been running a six port G8BPQ switch for several years utilizing
> kiss tncs to two 9600 baud radios, one 1200 baud radio and a pair of wire
> links to outlying nodes. Serial ports are all 16550 type uarts, a
> STB-4com and a standard AT style i/o card.
>   Traffic through the switch is a good mix of ax25, netrom, and tcp/ip.
> The switch utilizes g8bpq's ipgate for the ip traffic, works real well.
>   I am running DesqView and usually 7 windows, the main one is a program
> ingesting NWS weather data from a GTE satellite downlink. Other sessions
> consist of three copies of a menu driven program for packet users to
> access the NWS products, the ipgate prgm, the sysop prgm, and term4.
>   The switch is _very_ stable, it has run for up to a year with no problems.
> Uses dos ver 5, qemm 6.0, desqview 2.41, hyperdisk, bpq4.07a.
>
I'm currently only running a 2 port G8BPQ switch, two 1200 baud KISS TNC ports.
I have an STB-4COM, and the multi-I/O card. I use the IPGATE facility.

Its running under Desqview/X usually with 5 windows, foreground and background
have the same number of ticks. I'm currently running PAC4, IPGATE, FBB, ARESDATA,
and JNOS.

Recently put DOS 6.22, QEMM 7.04, Desqview 2.43 (DvX 2.0), BPQ4.07A, FBB5.15C...

And, I'm running JNOS1.08dfd (I got the source, and recompiled my own with a
few minor changes to talk in the local TCP/IP environment better).

The JNOS uses the switch for loopback, and can also talk directly out of the
local frequency on BPQ. And, there's a 19200 SLIP link over to this computer
(Amiga 3000).

FBB also has a landline modem on it.

>   My latest attempt is jnos110f with n5faz's bpq host interface (1.4)
> with most everything removed except tcp/ip services. Thought I finally
> had something workable, but alas the switch is down and cannot be reset
> till monday morning, though it has been known to restart. When I last
> checked, nos had plenty of memory and was going for a record, it was
> nearing 48 hours of uptime.. forwarding was working great.
>
I gave up with JNOS 1.10C, I also used the nodedrv4 route, since I found the
BPQ code to cause all kinds of other problems.

My record for uptime has been 2 weeks, it took a power outage to kill that record.
And, then lately I've been doing some updates and recompiles, etc.

--
 "Just a Crazy Engineer with an Amiga and an HP48sx"   - The Dreamer
 Email: dreamer@lhaven.uumh.ab.ca or "Lawrence Chen" @ 1:134/3002
 PHONE: +1 403 526 6019   FAX: +1 403 529 5102   CIS: 74200,2431
 Praxis Society K12 BBS: +1 403 529 1610 Lunatic Haven: +1 403 526 6957
 CYSNET Packet BBS: +1 403 526 4304 LHaven Dialup: +1 403 526 5035
 Packet: VE6LKC @ VE6PAQ.AB.CAN.NOAM

107. Re: NOS as a switch (was RE: BPQ+NOS Switch)

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Tue, 19 Jul 1994 05:09:51 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9407190521.A29493-0100000@kazak>
Rendered body type: text/plain

Boy did Hank say it all? I think so, and for Hank I have been
running the BPQ switch for 4 years and the only bug was in the latest
version where John made a change that stopped the nos connection from
working properly. All the 4.05 versions are as always super stable.

-karl k5di

108. Re: Nos as a Switch.

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Tue, 19 Jul 1994 05:29:57 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9407190525.B29493-0100000@kazak>
Rendered body type: text/plain

On Tue, 19 Jul 1994, TAPR Network Special Interest Group wrote:

> From: wb9mjn@k9vxw.ampr.org.
> Subject: Re: Nos as a Switch.
> To: netsig@tcet.unt.edu
> Date: Mon, 18 Jul 94 23:28:46 UTC
>
>
>   Hi. Once again Hank has pulled me out of the woodwork, hi.
>
>   In Anthropology class, we learned about "Island Evolution". This is evolution
> that occurs in an isolated area. Sometimes it leads species down a path of
> such specialization, that these animals cannot exist anywhere else but in that
> one area. I think Hank's attitude toward BBSs and Nodes puts Ham Packet at
> risk to become one such specie. Well, i shouldn t say it that way. Hi. But
> what i mean, is that we can t have as a narrow a focus as this. I ve personally
> sent messages to one other BBS programmer, who s system started this BBS as
> NETWORK hub malarky, as well.

        Listen all you armchair experts! If you don't own a network node,
or have tried to actually YOURSELF make something work you should not
comment!

>
>   Hank, u have a fine system, but u can t honestly believe ur system has the
> same speed , doing all it has to, as a piece of hardware specifically designed
> to do the Switch task, as fast as possible ? In my experience, not so much with
> the G8BPQ, but with the other BBS system that foists itself off as a network

        I RUN the BPQ switch. It is much faster than the 9600 baud node
connected to it. And there are now GOOD new versions of KISS that do work
well if not good...

> switch, its apparent these things have miserably low capacity to get date
> xxxx data from one port to the other. I guess people just don t notice this
> because they are using KISS tncs. Which are also misreably slow compared to
> something running DMA right to the modem port.

        Where does the crap end? Who ever said a kiss tnc was as fast as
Direct Memory Access to a computer?
[B
>   A reliable version of NOS has been available since 1989. In the Gracilis
> PacketTEN switch. These things run for months and months, usually till a
> power glitch , or failure. Yes, they are doing the switch function only,
> and use the thruput they have to remotely access any disk based services.
> Don Lemley, N4PCR has done a great job making NOS practical. But, P10s
> are not produced in enuf quantities to impact much of Ham Packet Radio.
> That s probably not his fault. U probably can guess from the beginning of
> this message where i think the shortsightedness lays, hi.
>
> If we build a network of switches that can t keep up with even the thruputs
> available on CSMA 9600 baud backbone links, what use is it ? That doesn t
> mean G8BPQ with KISS tncs doesn t work. Its just that half the thruput is
> wasted in the KISS TNC. Combined with CSMA effects, that puts ur expensive
> 9600 baud equipment down to the capacity of the continuously transmitting
> 1200 baud TNC. And even at that rate, the typical BBS based network hub
> is going to have a hard time keeping 3 ports charged, when it has to grind
> thru its mail file, for whatever reason.

        What does the bbs function have to do with the switch function?
If the computer is an 8088 maybe, but not now.

> BBS s should hang off switches. Either by radio links, or wire links. NEVER
> NEVER NEVER, should a network path go THRU a BBS computer. Only thru hardware
> specifically designed for the switch task, that is not doing ANY server
> functions whatsoever.

        Don who do you think puts UP the network? It is the bbs sysop! I
run the network thru MY computer that is doing many things at the same
time. Like it's a 486dx66 machine. It IS fast.

> If this is not the case, the end result can only be the type of network

> Hank describes to us. Because there wont be enuf thruput to do anything
> else.

        The point you obviously want to miss Don is that Hanks system has
been up running for YEARS without crashing. So has mine. I have been told
by no one that nos stays up anywhere near as long. End of story.

>
> 73, Don
>
> wb9mjn@uugate.wa7slg.ampr.org
>
>
>
>
>
-karl k5di

109. Re: Nos as a Switch.

From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
Date: Tue, 19 Jul 94 11:15:45 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <9407191115.ZM16738@hanko>
Rendered body type: text/plain

On Jul 19, 1:28am, TAPR Network Special Interest Group wrote:
> Subject: Re: Nos as a Switch.
> From: wb9mjn@k9vxw.ampr.org.
> Subject: Re: Nos as a Switch.
> To: netsig@tcet.unt.edu
> Date: Mon, 18 Jul 94 23:28:46 UTC
>
>
>   Hi. Once again Hank has pulled me out of the woodwork, hi.

> BBS s should hang off switches. Either by radio links, or wire links. NEVER
> NEVER NEVER, should a network path go THRU a BBS computer. Only thru hardware
> specifically designed for the switch task, that is not doing ANY server
> functions whatsoever.
>
> If this is not the case, the end result can only be the type of network
> Hank describes to us. Because there wont be enuf thruput to do anything
> else.
>
> 73, Don

Nice theory, but do you have any data to back this up?

The network switching functions operate at interrupt priority.
The other functions the computer performs do not.

Under high network load, other operations will slow down.
I don't see that happen very often.

My choices are fairly limited: I don't do hardware, do not have
access to a lab (or even a scope or counter). I'll run whatever
I can purchase and put on air. My interest is in creating applications,
and I just don't care what network those applications run on top of.
I'll use whatever is available. Give me better choices than I have
now, and I will use them.

   ... Hank

--

Hank Oredson @ Mentor Graphics   Library Operations
Internet   : hank_oredson@mentorg.com   "Parts 'R Us!"
Amateur Radio: W0RLI@W0RLI.OR.USA.NOAM

110. Re: NOS as a switch (was RE: BPQ+NOS Switch)

From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
Date: Tue, 19 Jul 94 11:23:58 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <9407191123.ZM16743@hanko>
Rendered body type: text/plain

On Jul 19, 1:53am, TAPR Network Special Interest Group wrote:
> Subject: Re: NOS as a switch (was RE: BPQ+NOS Switch)

> Wow, that IS stability. But Hank, you failed to mention what it is you
> are using. From your comments I suspect that it is not NOS. Is it a PBBS?
> If so, what good does it do to a network? I think of PBBS's as
> applications and do nothing at the OSI netwrk lower layers (boy, this
> comment oughta really ruffle those feathers :-)

I have a tee shirt that says "OSI layer 7" ...
Thought that everyone knew that I ran only my own application code,
and will run ANY network code required to talk to the network in
which my system resides. The network code is "someone elses problem."

> > Since NOS has not accomplished these things in (approx) 11 years of
> > trying, I had hoped that this group would focus on things that might
> > actually help our existing network. What things? Better implementations
> > of NET/ROM perhaps.   ^^^^^^^^^^^^^^^^^^^^^
>   ^^^^^^^^^^^^^^^^^^
>
> AAAAAACCCCCCCCCCKKKKKKKKKKKKK!!!!!!!!! I hope you forgot a smiley in
> there ;-)

No smiley ... I've seen NOS (NOS, JNOS, WNOS) in operation, and have
run it myself. I'm not impressed. It does very little of what my users
want, and when they were given the choice they never used the NOS system.
Yes, I had them both on air and equally available with all the same
msg and bulletin capability. I was certainly not impressed with NOS
ability to maintain routes without human intervention. RSPF or
some other autmated routing package needs to work as well as NET/ROM.

(about needing better network package for apps to run on)

> I definatly agree here. NOS is primarily experimental for the most part.
> Maybe we need a good stable, user friendly NOS that is bare bones
> networking and has lots of good user applications.

If such a networking package existed, I would write my apps on top
of it, rather than on top of BPQ. Right now, BGP is the simple way
to go, and is required in any case: our network run NET/ROM ...

   ... Hank

--

Hank Oredson @ Mentor Graphics   Library Operations
Internet   : hank_oredson@mentorg.com   "Parts 'R Us!"
Amateur Radio: W0RLI@W0RLI.OR.USA.NOAM

111. Re: Nos as a Switch.

From: bruce@pixar.com (Bruce Perens)
Date: Tue, 19 Jul 94 14:26 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <m0qQMft-0006XaC@mongo.pixar.com>
Rendered body type: text/plain

>From: Don <wb9mjn@k9vxw.ampr.org>
> Hi. Once again Hank has pulled me out of the woodwork, hi.
Sorry. He really should have known better. :-)

> From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
> The network switching functions operate at interrupt priority.
> The other functions the computer performs do not.

This is true for "real" networking stacks, but not for NOS.

NOS doesn't run its router functions at interrupt priority, and its
scheduler, though it can prioritize routing over an application, is
not pre-emptive. Despite this, it is adequate to route 9600 baud
networks while running an application.

Alan's Linux kernel AX.25 and TCP/IP do indeed run as you describe.
Packet forwarding will interrupt an application in progress, and the
application won't get the system back until there is no higher priority
task to execute.

Even on a fully pre-emptive system, some tasks may run with interrupts

disabled and cause higher interrupt latency. On my Linux system, IDE disk I/O transfers run with interrupts disabled. I have a 3C509 Ethernet card, which has a _tiny_ packet buffer and demands real-time service of the OS. One would think that Ethernet file transfers, which use both the disk and the network, might cause dropped packets, but I've not seen that happen. I doubt we'll have many networks as fast as Ethernet any time soon.

Bruce Perens AB6YM

112. Nos as the new switch

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Tue, 19 Jul 1994 15:52:16 -0600 (MDT)
To: Sig Networking <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9407191546.A10781-0100000@kazak>
Rendered body type: text/plain

Today as I sit in my room at the doubletree so near the Pentegon we walked back to it, I used the Internet to connect to my bbs in Las Cruces, NM and learned that Remi Houtin, f6cnb is going on vacation today and will not be back until August 18, 1994. He said "cross your fingers that my JNOS will stay up that long".

I will report to this network sig how long it stays up. 2 days is my bet. I will be amazed if it makes the weekend. Sure I will make out, but I'll need to send all mail to Tucson now...

73, de karl k5di

113. Re: Nos as a Switch.

From: Tim Baggett <wbaggett@NMSU.edu>
Date: Tue, 19 Jul 1994 16:15:57 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.87.9407191657.A8622-0100000@gauss>
Rendered body type: text/plain

On Tue, 19 Jul 1994, TAPR Network Special Interest Group wrote:

> From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
> Subject: Re: Nos as a Switch.
> To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
> Date: Tue, 19 Jul 94 11:15:45 PDT
>
>
> The network switching functions operate at interrupt priority.
> The other functions the computer performs do not.

I believe incoming packets are processed at interrupt priority, but doesn't the further routing of such packets and the processing of the packets (IE what does the PC do with the receive packet) take place in 'normal' CPU time?

>
> Under high network load, other operations will slow down.
> I don't see that happen very often.
>

I have seen what I believe is skipped interrupts and hence dropped packets on a busy network. I believe that places an unnecessary load on the network.

73
Tim

****
Tim Baggett, AA5DF Electrical Engineering Student
New Mexico State University
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AMPR: AA5DF@NMSUGW.AMPR.ORG US Snail: 1805 Rentfrow Apt #1
(When on) AA5DF.AMPR.ORG Las Cruces, NM 88001
****

114. Abandoning The Network Goals

From: ssampson@sabea-oc.af.mil (Steve Sampson)
Date: Tue, 19 Jul 1994 17:26:15 -0500 (CDT)
To: netsig@tcet.unt.edu

Message-ID: <9407192226.AA03018@sabea-oc.af.mil>
Rendered body type: text/plain

> I've seen NOS (NOS, JNOS, WNOS) in operation, and have run it myself. I'm
> not impressed. It does very little of what my users want, and when they
> were given the choice they never used the NOS system.

Yes I agree. We should not develop any more networks. We should keep using Net/Rom because it works real good with my VIC-20. I get really pissed off when people advocate more sophisticated networks. By golly CW is the only way to go. When I saw NOS I got so scared that I wet my pants. Just think if this idea took off! By golly. If I couldn't use my VIC-20 and black and white TV to "network" I might have to sue the sysop. I'm with Hank! Let's stop all this foolishness. If I have to buy another computer my Wife may have to increase my allowance! There should be NO improvement in networking, we should stay at 30 baud forever by golly. If I really need to transfer data I can do it with CW by golly. I just got a copy of TheNet from a buddy of mine. He says it was stolen from a company that tried to get us Hams to pay for our software. Well, by golly, I won't stand for it. Can anyone help me install it on my VIC-20 by golly. . . (you get my drift I'm sure)

This past group of messages has disturbed me. It seems that many amateurs are still firmly entrenched in the glass TTY user interface. The reason your users didn't like NOS Hank was because they interfaced with it through an AX.25 connection. They did not use an application layer sitting on top of the network; they used an application that was below the network layer. The poor slobs probably can't even spell IBM or ATARI or APPLE. They can only spell Commodore. So you people seem to be saying that these unsophisticated users are what is driving amateur packet radio? That we shouldn't be any more sophisticated than an application that can interface to a CW network layer? The reason your users did not interface with an application on top of the network layer is because the amateur packet radio network is incapable of supporting this. There is no damn way a Windows or Mac is going to interface with another computer using a 1200 baud rate. So yes, your users will see no advantage to using NOS over a BBS. They are equivelant at 1200 baud. They are crap. Everything turns to crap when you force it down a pipe that is 1000 sizes to small. If you tried to put a chicken through a 1/16" pipe you will get crap.

That means things have to change. The idiots with pop-up nodes and gang fights to control a frequency are obsolete. Any 9 year old child can operate a Net/Rom and they do. Every day sees a new Node pop up or a BBS appear on the user frequency. This is packet radio today. Where are we going when the old men and their BBS die off? What role will computer networks play in amateur radio? The answer so far has been that there is no roll: computer networks should be done over wire - not radio. For radio we must use a BBS. Some people (me) feel that there is something missing. There is. There is no amateur radio network infrastructure being built to support speeds of 1 Meg or 10 Meg systems. There have been many articles published showing that practical methods are available to achieve these speeds but the amateur community has changed from innovators to appliance operators. Until these high speed systems can be purchased and self-calibrate, the current ham population will be unable to operate them. But I think this is where we need to be headed. We've already done Net/Rom, BPQ, and BBS. What's next? Death?
--
Steve

115. Re: NOS as a switch (was RE: BPQ+NOS Switch)

From: Tim Baggett <wbaggett@NMSU.edu>
Date: Tue, 19 Jul 1994 16:40:00 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.87.9407191600.B8622-0100000@gauss>
Rendered body type: text/plain

Hank,

First, The OSI network layers are (supposed to be) seperate. This means your OSI layer 7 application PBBS should not and does not have anything to do with the lower network and transport layers.

I understand why you are writting your applications for BPQ - because it is easy to do compared to NOS, and the BPQ network software is much more stable. You are right that the networking stuff is for "others to deal with" - that is why we are on this list.

Unfortunatly, I do not see the amateur packet world even trying to conform tho the "ideal" way things are meant to operate in a network. As an example (not trying to be specific here), your PBBS interfaces with NET/ROM through a BPQ switch. Guys, shouldn't the network stuff be seperated from the application stuff? Look, this is NOS's largest

problem, and the reason it is not any more stable than it is. NOS is both
a network AND application package.

OK, I'll stick my feet in my mouth a little farther here and bring up a
suggestion for developers:
Keep the network stuff seperate from the applictions. How about creating
amateur radio 'network drivers' that run as a TSR to the PC. You can have
(as there currently seems to be) a G8BPQ/NETROM driver, and another
TCP/IP driver. The TCP/IP drivers can work, just look at PCNFS, etc. They
have drivers that control the network operations, but leave the
application stuff seperate. The application software should, and IMHO,
can be run on the PC interfacing to the network driver for data transfer
over the network. The application does not care what network driver it is
talking to, because there is a 'standard' by which the application
software talks to the driver.

Should this be a direction to consider when we are writing software?

NET/ROM, as I said before, is NOT going to cut it when it comes to a wide
area network. The problems can be easily seen, and have been pointed out
on here before.

TCP/IP routing is not as hard as you mentioned Hank. In the amateur world
there is a lot of TCP/IP routing mis-use. Routes should consist of a lot
of defaults and not a huge table of specific routes to individual hosts
around the nation. In areas where Internet gateways are running this
feature of TCP/IP is clearly seen by being able to telnet to a host on
another continent and sending mail to another host in yet another
continent with only one entry in the TCP/IP routing table.

I'm not saying that TCP/IP is the ultimate answer for packet, because it
isn't. I think starting over is a good idea, but that'll never happen, hihi!

73
Tim

****
Tim Baggett, AA5DF   Electrical Engineering Student
                                      New Mexico State University
Internet: WBAGGETT@NMSU.EDU
AMPR: AA5DF@NMSUGW.AMPR.ORG   US Snail: 1805 Rentfrow Apt #1
(When on) AA5DF.AMPR.ORG   Las Cruces, NM 88001
****

116. BPQ Switches

From: Sperry Davis <sperry@pinn.net>
Date: Wed, 20 Jul 1994 00:10:00 -0500 (EST)
To: netsig@tcet.unt.edu
Message-ID: <Pine.3.89.9407200027.A27032-0100000@everest>
Rendered body type: text/plain

Thanks for the suggestions for BPQ+NOS. I have reverted back a step to
BPQ 4.06k, will see how that runs. Still utilizing the nos2bpq code.
  I did have a small problem in that my program creating smtp mail files
from the wx data was not creating a .LCK file and I caught nos diligently
opening .wrk and .txt files that were not quite finished.... fixed!

Don mentions:
> A reliable version of NOS has been available since 1989. In the Gracilis
>PacketTEN switch. These things run for months and months, usually till a

  Yes, we also have a Gracilis switch in town here that does a respectable
job. Although its thruput is somewhat hindered by using kiss tncs with it.
The owner never got the internal modems to work as well as the tnc(s) we
had expected to replace. So we have never seen what it is really capable of.
  Our Gracillis resets itself several times per day, one ax25 user swears
it resets every time he uses it. Of course this does not affect the ip'ers
but others users tend to shy away from it.

> BBS s should hang off switches. Either by radio links, or wire links. NEVER
>NEVER NEVER, should a network path go THRU a BBS computer. Only thru hardware
>specifically designed for the switch task, that is not doing ANY server
>functions whatsoever.

  Agreed, I would like to split the functions, but Gracilis switches are
a little hard on the pocketbook. I have found that the BPQ switch with
19.2k links to kiss only tncs gives excellent performance. Compared to the
alternative of a stack of nodes on a diode matrix, baud rates can be mixed,
one common callsign, and a fairly easy host interface for applications.

Eventually I will probably split the switch off of the server, but you gotta start somewhere. Until about two years ago 1200 baud on 145.01 was considered networking, many here still think that it is.

Sperry/n4sd
PBBS: N4SD@WD4MIZ.#TIDE.VA.USA.NOAM IP ADDRESS: [44.62.64.40]
Compuserve: Sperry Davis(70473,3316) InterNet: sperry@pinn.net

117. Kiss Code

From: Sperry Davis <sperry@pinn.net>
Date: Wed, 20 Jul 1994 00:12:46 -0500 (EST)
To: netsig@tcet.unt.edu
Message-ID: <Pine.3.89.9407200032.A27078-0100000@everest>
Rendered body type: text/plain

> I RUN the BPQ switch. It is much faster than the 9600 baud node
>connected to it. And there are now GOOD new versions of KISS that do work
>well if not good...

Hank, what kiss code are you using? I have changed most of the tncs to the tapr kiss_only firmware to keep power glitches from dropping the tncs out of kiss mode. Many of the tncs also are upgraded to 10MHz clock.

Sperry/n4sd
PBBS: N4SD@WD4MIZ.#TIDE.VA.USA.NOAM IP ADDRESS: [44.62.64.40]
Compuserve: Sperry Davis(70473,3316) InterNet: sperry@pinn.net

118. Re: Nos as a Switch.

From: bruce@pixar.com (Bruce Perens)
Date: Tue, 19 Jul 94 14:26 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <m0qQMft-0006XaC@mongo.pixar.com>
Rendered body type: text/plain

>From: Don <wb9mjn@k9vxw.ampr.org>
> Hi. Once again Hank has pulled me out of the woodwork, hi.
Sorry. He really should have known better. :-)

> From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
> The network switching functions operate at interrupt priority.
> The other functions the computer performs do not.

This is true for "real" networking stacks, but not for NOS.

NOS doesn't run its router functions at interrupt priority, and its scheduler, though it can prioritize routing over an application, is not pre-emptive. Despite this, it is adequate to route 9600 baud networks while running an application.

Alan's Linux kernel AX.25 and TCP/IP do indeed run as you describe. Packet forwarding will interrupt an application in progress, and the application won't get the system back until there is no higher priority task to execute.

Even on a fully pre-emptive system, some tasks may run with interrupts disabled and cause higher interrupt latency. On my Linux system, IDE disk I/O transfers run with interrupts disabled. I have a 3C509 Ethernet card, which has a _tiny_ packet buffer and demands real-time service of the OS. One would think that Ethernet file transfers, which use both the disk and the network, might cause dropped packets, but I've not seen that happen. I doubt we'll have many networks as fast as Ethernet any time soon.

Bruce Perens AB6YM

119. Nos as the new switch

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Tue, 19 Jul 1994 15:52:16 -0600 (MDT)
To: Sig Networking <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9407191546.A10781-0100000@kazak>
Rendered body type: text/plain

Today as I sit in my room at the doubletree so near the Pentegon we walked back to it, I used the Internet to connect to my bbs in Las Cruces, NM and learned that Remi Houtin, f6cnb is going on vacation today and will not be back until August 18, 1994. He said "cross your fingers that my JNOS will stay up that long".

I will report to this network sig how long it stays up. 2 days is my bet. I will be amazed if it makes the weekend. Sure I will make out, but I'll need to send all mail to Tucson now...

73, de karl k5di

120. Re: Nos as a Switch.

From: Tim Baggett <wbaggett@NMSU.edu>
Date: Tue, 19 Jul 1994 16:15:57 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.87.9407191657.A8622-0100000@gauss>
Rendered body type: text/plain

On Tue, 19 Jul 1994, TAPR Network Special Interest Group wrote:

> From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
> Subject: Re: Nos as a Switch.
> To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
> Date: Tue, 19 Jul 94 11:15:45 PDT
>
>
> The network switching functions operate at interrupt priority.
> The other functions the computer performs do not.

I believe incoming packets are processed at interrupt priority, but doesn't the further routing of such packets and the processing of the packets (IE what does the PC do with the receive packet) take place in 'normal' CPU time?

>
> Under high network load, other operations will slow down.
> I don't see that happen very often.
>

I have seen what I believe is skipped interrupts and hence dropped packets on a busy network. I believe that places an unnecessary load on the network.

73
Tim

****
Tim Baggett, AA5DF Electrical Engineering Student
                    New Mexico State University
Internet: WBAGGETT@NMSU.EDU
AMPR: AA5DF@NMSUGW.AMPR.ORG US Snail: 1805 Rentfrow Apt #1
(When on) AA5DF.AMPR.ORG Las Cruces, NM 88001
****

121. Abandoning The Network Goals

From: ssampson@sabea-oc.af.mil (Steve Sampson)
Date: Tue, 19 Jul 1994 17:26:15 -0500 (CDT)
To: netsig@tcet.unt.edu
Message-ID: <9407192226.AA03018@sabea-oc.af.mil>
Rendered body type: text/plain

> I've seen NOS (NOS, JNOS, WNOS) in operation, and have run it myself. I'm
> not impressed. It does very little of what my users want, and when they
> were given the choice they never used the NOS system.

Yes I agree. We should not develop any more networks. We should keep using Net/Rom because it works real good with my VIC-20. I get really pissed off when people advocate more sophisticated networks. By golly CW is the only way to go. When I saw NOS I got so scared that I wet my pants. Just think if this idea took off! By golly. If I couldn't use my VIC-20 and black and white TV to "network" I might have to sue the sysop. I'm with Hank! Let's stop all this foolishness. If I have to buy another computer my Wife may have to increase my allowance! There should be NO improvement in networking, we should stay at 30 baud forever by golly. If I really need to transfer data I can do it with CW by golly. I just got a copy of TheNet from a buddy of mine. He says it was stolen from a company that tried to get us Hams to pay for our software. Well, by golly, I won't stand for it. Can anyone help me install it on my VIC-20 by golly. . . (you get my drift I'm sure)

This past group of messages has disturbed me. It seems that many amateurs are still firmly entrenched in the glass TTY user interface. The reason your users didn't like NOS Hank was because they interfaced with it through an

AX.25 connection. They did not use an application layer sitting on top of
the network; they used an application that was below the network layer.
The poor slobs probably can't even spell IBM or ATARI or APPLE. They can only
spell Commodore. So you people seem to be saying that these unsophisticated
users are what is driving amateur packet radio? That we shouldn't be any more
sophisticated than an application that can interface to a CW network layer?
The reason your users did not interface with an application on top of the
network layer is because the amateur packet radio network is incapable of
supporting this. There is no damn way a Windows or Mac is going to interface
with another computer using a 1200 baud rate. So yes, your users will see no
advantage to using NOS over a BBS. They are equivelant at 1200 baud. They
are crap. Everything turns to crap when you force it down a pipe that is
1000 sizes to small. If you tried to put a chicken through a 1/16" pipe you
will get crap.

That means things have to change. The idiots with pop-up nodes and gang fights
to control a frequency are obsolete. Any 9 year old child can operate a Net/Rom
and they do. Every day sees a new Node pop up or a BBS appear on the user
frequency. This is packet radio today. Where are we going when the old men
and their BBS die off? What role will computer networks play in amateur radio?
The answer so far has been that there is no roll: computer networks should be
done over wire - not radio. For radio we must use a BBS. Some people (me)
feel that there is something missing. There is. There is no amateur radio
network infrastructure being built to support speeds of 1 Meg or 10 Meg
systems. There have been many articles published showing that practical
methods are available to achieve these speeds but the amateur community has
changed from innovators to appliance operators. Until these high speed
systems can be purchased and self-calibrate, the current ham population will
be unable to operate them. But I think this is where we need to be headed.
We've already done Net/Rom, BPQ, and BBS. What's next? Death?
--
Steve

122. Re: NOS as a switch (was RE: BPQ+NOS Switch)

From: Tim Baggett <wbaggett@NMSU.edu>
Date: Tue, 19 Jul 1994 16:40:00 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.87.9407191600.B8622-0100000@gauss>
Rendered body type: text/plain

Hank,

First, The OSI network layers are (supposed to be) seperate. This means
your OSI layer 7 application PBBS should not and does not have anything
to do with the lower network and transport layers.

I understand why you are writting your applications for BPQ - because it
is easy to do compared to NOS, and the BPQ network software is much more
stable. You are right that the networking stuff is for "others to deal
with" - that is why we are on this list.

Unfortunatly, I do not see the amateur packet world even trying to
conform tho the "ideal" way things are meant to operate in a network. As
an example (not trying to be specific here), your PBBS interfaces with
NET/ROM through a BPQ switch. Guys, shouldn't the network stuff be
seperated from the application stuff? Look, this is NOS's largest
problem, and the reason it is not any more stable than it is. NOS is both
a network AND application package.

OK, I'll stick my feet in my mouth a little farther here and bring up a
suggestion for developers:
Keep the network stuff seperate from the applictions. How about creating
amateur radio 'network drivers' that run as a TSR to the PC. You can have
(as there currently seems to be) a G8BPQ/NETROM driver, and another
TCP/IP driver. The TCP/IP drivers can work, just look at PCNFS, etc. They
have drivers that control the network operations, but leave the
application stuff seperate. The application software should, and IMHO,
can be run on the PC interfacing to the network driver for data transfer
over the network. The application does not care what network driver it is
talking to, because there is a 'standard' by which the application
software talks to the driver.

Should this be a direction to consider when we are writing software?

NET/ROM, as I said before, is NOT going to cut it when it comes to a wide
area network. The problems can be easily seen, and have been pointed out
on here before.

TCP/IP routing is not as hard as you mentioned Hank. In the amateur world

there is a lot of TCP/IP routing mis-use. Routes should consist of a lot
of defaults and not a huge table of specific routes to individual hosts
around the nation. In areas where Internet gateways are running this
feature of TCP/IP is clearly seen by being able to telnet to a host on
another continent and sending mail to another host in yet another
continent with only one entry in the TCP/IP routing table.

I'm not saying that TCP/IP is the ultimate answer for packet, because it
isn't. I think starting over is a good idea, but that'll never happen, hihi!

73
Tim

****
Tim Baggett, AA5DF   Electrical Engineering Student
                                      New Mexico State University
Internet: WBAGGETT@NMSU.EDU
AMPR: AA5DF@NMSUGW.AMPR.ORG   US Snail: 1805 Rentfrow Apt #1
(When on) AA5DF.AMPR.ORG   Las Cruces, NM 88001
****

123. Re: NOS as a switch (was RE: BPQ+NOS Switch)

From: rob <mayfield@guest.adelaide.edu.au>
Date: Wed, 20 Jul 1994 09:45:59 +0930 (CST)
To: netsig@tcet.unt.edu
Message-ID: <9407200016.AA03867@wattle.itd.adelaide.edu.au>
Rendered body type: text/plain

> From: hank_oredson@rainbow.mentorg.com (Hank Oredson)

[Stuff deleted ...]

> Thought that everyone knew that I ran only my own application code,

[Stuff deleted ...]

> No smiley ... I've seen NOS (NOS, JNOS, WNOS) in operation, and have
> run it myself. I'm not impressed. It does very little of what my users
> want, and when they were given the choice they never used the NOS system.

I wonder what is really coming across here ...

Rob

124. Re: Abandoning The Network Goals

From: Tim Baggett <wbaggett@NMSU.edu>
Date: Wed, 20 Jul 1994 08:46:34 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.87.9407200834.B13430-0100000@gauss>
Rendered body type: text/plain

On Wed, 20 Jul 1994, TAPR Network Special Interest Group wrote:

> From: ssampson@sabea-oc.af.mil (Steve Sampson)
> Subject: Abandoning The Network Goals
> To: netsig@tcet.unt.edu
> Date: Tue, 19 Jul 1994 17:26:15 -0500 (CDT)
>
>
> > I've seen NOS (NOS, JNOS, WNOS) in operation, and have run it myself. I'm
> > not impressed. It does very little of what my users want, and when they
> > were given the choice they never used the NOS system.
>
> Yes I agree. We should not develop any more networks. We should keep using
> Net/Rom because it works real good with my VIC-20. I get really pissed off
> when people advocate more sophisticated networks. By golly CW is the only
> way to go. When I saw NOS I got so scared that I wet my pants. Just think

Oh boy did this hit a nerve with me. This is the additude that is going
to keep ham radio in the dark ages. Heck, we're already years behind what
is going on. The only group in amateur radio that I even see doing
anything TECHNICAL and CHALLENGING is AMSAT. When I first got my license
at age 14 (9 years ago) I was told that this hobby is full of a lot of
go-getters and people who push technology. Geez, I think somebody lied to
me. I get really pissed off when the ole AM'ers and 7 WPM CW ops insist
on sitting in the spark gap days.

> if this idea took off! By golly. If I couldn't use my VIC-20 and black and
> white TV to "network" I might have to sue the sysop.

Well, ya might have to just sue me then. You're sure the heck not going
to get much besides a few student loans, hihi.

> I'm with Hank! Let's
> stop all this foolishness. If I have to buy another computer my Wife may
> have to increase my allowance! There should be NO improvement in networking,
> we should stay at 30 baud forever by golly. If I really need to transfer data
> I can do it with CW by golly.

Catch my quote of the day.....

> I just got a copy of TheNet from a buddy of
> mine. He says it was stolen from a company that tried to get us Hams to pay
> for our software. Well, by golly, I won't stand for it. Can anyone help me
> install it on my VIC-20 by golly. . . (you get my drift I'm sure)

Why do you want a network node software package to run on your VIC-20
anyway? Sounds like you're a user and not a network node to me...

> supporting this. There is no damn way a Windows or Mac is going to interface
> with another computer using a 1200 baud rate. So yes, your users will see no
> advantage to using NOS over a BBS. They are equivelant at 1200 baud. They
> are crap. Everything turns to crap when you force it down a pipe that is
> 1000 sizes to small. If you tried to put a chicken through a 1/16" pipe you
> will get crap.

And right now we have CRAP. 9600 bps is only the beginning for me. My
goal someday is for T1 RF links. If your VIC-20 can't handle it, too bad.
If a college student can gather surplus 'junk' equipment, and assemble
junk pieces for create a PC, I think others on an XYL budget can do the same.

The game here is _progress_, not _stale_.

>
> That means things have to change. The idiots with pop-up nodes and gang fights
> to control a frequency are obsolete. Any 9 year old child can operate a Net/Rom
> and they do. Every day sees a new Node pop up or a BBS appear on the user
> frequency. This is packet radio today. Where are we going when the old men
> and their BBS die off?

Well, As a student trying to continue the radio club here at NMSU, I've
discovered that it is the LACK of progress in our hobby that keeps the
younger guys away - myself included. I've drifted so far from packet in
the last year, it is not funny. I've been lucky that ham radio has been a
starting point for my career, but it's like running a model T when I
could have a Lexus. Next week I hope to get my hands on experience with
Frame Relay' when the University switches to a new Internet connection.

> We've already done Net/Rom, BPQ, and BBS. What's next? Death?

Only short sighted see death as the next step. I see packet radio as just
barely limping along in most places. There are PLENTY of areas of packet
radio that we can work on and improve. And whats more, is we have the
talent right here on this group.

Enough for now. I'm going back to work on a real network.

73
Tim

"If you can't run with the big dogs, then stay on the porch, take the OL
to the movies and leave the networking to us." - modified from a quote in
the WPX contest section of CQ Magazine

****
Tim Baggett, AA5DF   Electrical Engineering Student
                                      New Mexico State University
Internet: WBAGGETT@NMSU.EDU
AMPR: AA5DF@NMSUGW.AMPR.ORG   US Snail: 1805 Rentfrow Apt #1
(When on) AA5DF.AMPR.ORG   Las Cruces, NM 88001
****

125. Be nice, boys and girls!

From: "Battles, Brian" <bbattles@arrl.org>
Date: Wed, 20 Jul 94 15:15:00 EDT
To: TAPR NETSIG <netsig@tcet.unt.edu>

Message-ID: <2E2D78F2@arrl.org>
Rendered body type: text/plain

Pardon me for opening a new topic, but before it goes too far, could we argue just a tiny bit less here and post practical suggestions/ideas/solutions just a tiny bit more?

Not to sound like a whiner, but this forum gets dull when lots of people argue about NetROM vs PBBSs, etc. It should prove much more productive to restrict whatever you post to positive language whenever possible (eg, "If you're happy using <whatever>, here's something that may be worth testing as an alternative..." and "I tried NOS instead of <whatever> and I liked its potential for <whatever>, but I had trouble with it doing <whatever>. Can anyone suggest a better way?"

I believe the object here is to work together to devise ways to build/expand amateur packet radio networks, not to insult people who have different ideas or experiences.

Good gravy, we have some ingenious people on here who can (and do) write code and design/build/modify hardware to make it do wondrous things. Let's take advantage of each other's expertise and operate as a "distributed thinking machine," not an online wargame!

I suggest participants here send flames and negative "argue-y" comments via direct e-mail, not posted to the conference.

Grab a Post-It note, write "COOPERATE" on it, and stick it to your monitor case!

Just some QRM from me...

CUL es 73 de BB

Brian Battles, WS1O	I	Internet	bbattles@arrl.org
QST Features Editor	I	Compu$erve	70007,3373
ARRL HQ	I	MCI Mail	215-5052
Tel 203-666-1541	I	Amprnet	ws1o@ws1o-2.ampr.org [44.88.2.43]
Fax 203-665-7531			

COMMENTS EXPRESSED HEREIN ARE MY OWN PRIVATE, PERSONAL REMARKS AND ARE TOO INANE TO BE CONSIDERED OFFICIAL ARRL VIEWS OR POLICY.

126. Re: NOS as a switch (was RE: BPQ+NOS Switch)

From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
Date: Wed, 20 Jul 94 12:23:21 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <9407201223.ZM19766@hanko>
Rendered body type: text/plain

On Jul 20, 3:30am, TAPR Network Special Interest Group wrote:
> Subject: Re: NOS as a switch (was RE: BPQ+NOS Switch)
> From: Tim Baggett <wbaggett@NMSU.edu>
> Subject: Re: NOS as a switch (was RE: BPQ+NOS Switch)
> To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
> Date: Tue, 19 Jul 1994 16:40:00 -0600 (MDT)
>
> Hank,
>
> First, The OSI network layers are (supposed to be) seperate. This means
> your OSI layer 7 application PBBS should not and does not have anything
> to do with the lower network and transport layers.

Yes. I know. That's exactly what I said.

> I understand why you are writting your applications for BPQ - because it
> is easy to do compared to NOS, and the BPQ network software is much more
> stable. You are right that the networking stuff is for "others to deal
> with" - that is why we are on this list.

I did not say that. I said I write for NET/ROM, CLOVER, and other protocols because THAT IS WHAT IS AVAILBLE.

> Unfortunatly, I do not see the amateur packet world even trying to
> conform tho the "ideal" way things are meant to operate in a network. As
> an example (not trying to be specific here), your PBBS interfaces with
> NET/ROM through a BPQ switch. Guys, shouldn't the network stuff be
> seperated from the application stuff? Look, this is NOS's largest
> problem, and the reason it is not any more stable than it is. NOS is both
> a network AND application package.

Well ... duh ... isn't that interface between the bpq switch and the
application a layer 5 object? Did I miss something?

> OK, I'll stick my feet in my mouth a little farther here and bring up a
> suggestion for developers:
> Keep the network stuff seperate from the applictions. How about creating
> amateur radio 'network drivers' that run as a TSR to the PC. You can have
> (as there currently seems to be) a G8BPQ/NETROM driver, and another
> TCP/IP driver. The TCP/IP drivers can work, just look at PCNFS, etc. They
> have drivers that control the network operations, but leave the
> application stuff seperate. The application software should, and IMHO,
> can be run on the PC interfacing to the network driver for data transfer
> over the network. The application does not care what network driver it is
> talking to, because there is a 'standard' by which the application
> software talks to the driver.

That is exactly how my code is structured.
I have a bpq driver, a clover driver, a gtor driver, a pactor driver,
etc. Some have not been released. All talk to the application through
a non-optimum interface. I'd rather use Berkeley sockets as the interface,
but have been too lazy to actually do it that way.

> Should this be a direction to consider when we are writing software?

Yes. VERY STRONG yes. Think client/server. Think clear OSI layer
interfaces. This is my opinion of how things should be architected.
This is how I architect things at work - I write CAD/CAM/CAE/DATABASE
interface / networking applications for a living.

> NET/ROM, as I said before, is NOT going to cut it when it comes to a wide
> area network. The problems can be easily seen, and have been pointed out
> on here before.

Unless someone extends the protocol to have heirarchical addresses.
I see no reason this could not be done, while leaving the underlying
layer 2 through 4 downward compatible. Oh - one COULD also use tcp/ip,
if IT is extended (or applications created) so that one can have the
fully adaptive / autoconfiguring / etc. network we now have.

> TCP/IP routing is not as hard as you mentioned Hank. In the amateur world
> there is a lot of TCP/IP routing mis-use. Routes should consist of a lot
> of defaults and not a huge table of specific routes to individual hosts
> around the nation. In areas where Internet gateways are running this
> feature of TCP/IP is clearly seen by being able to telnet to a host on
> another continent and sending mail to another host in yet another
> continent with only one entry in the TCP/IP routing table.

I know exactly how this all works.

Did you do this telnet experiment over radio, or was it a simple gate
into the internet? There ARE some differences between the fixed topology
network which is the internet, and the variable topology network we have
(and will continue to have) over ham radio.

> I'm not saying that TCP/IP is the ultimate answer for packet, because it
> isn't. I think starting over is a good idea, but that'll never happen, hihi!

As with the move from 1200 baud to 9600 baud to 56k baud, we need to continue
to support the existing users of the existing network at the same time we
build new network. This is NOT simple. It is very tough.

>From my experience, I know that the problems are not technical ones.
The technical problems are simple, and have known solutions.

The political problems are another matter. Unless the users want
(even demand) that the network improve, it will not. The cost is
simply too high for a small elite to bear. I think that we will only
have a better network once we have a national organization with the
vision and the dedication to push the idea forward. We have no such

organization now, and that is why we have anarchy.

Of course, anarchy can be a lot of fun!

(For the humor impared - NONE of my postings are EVER meant to be
 taken seriously. This is a hobby. It is fun.)

   ... Hank

--

Hank Oredson @ Mentor Graphics   Library Operations
Internet   : hank_oredson@mentorg.com   "Parts 'R Us!"
Amateur Radio: W0RLI@W0RLI.OR.USA.NOAM

127. Re: Kiss Code

From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
Date: Wed, 20 Jul 94 12:34:44 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <9407201234.ZM19792@hanko>
Rendered body type: text/plain

On Jul 20, 1:31am, TAPR Network Special Interest Group wrote:
> Subject: Kiss Code
> From: Sperry Davis <sperry@pinn.net>
> Subject: Kiss Code
> To: netsig@tcet.unt.edu
> Date: Wed, 20 Jul 1994 00:12:46 -0500 (EST)
>
> >   I RUN the BPQ switch. It is much faster than the 9600 baud node
> >connected to it. And there are now GOOD new versions of KISS that do work
> >well if not good...
>
>   Hank, what kiss code are you using? I have changed most of the tncs to
> the tapr kiss_only firmware to keep power glitches from dropping the
> tncs out of kiss mode. Many of the tncs also are upgraded to 10MHz clock.
>
> Sperry/n4sd

In most tncs, we (the Portland metro network) are using the
extended KISS provided by G8BPQ - the key feature is that it
allows the switch to know the state of packets pending xmit
in the tnc, thus solving the main problem of the original KISS
implementation.

There are extended KISS EPROM images available for tnc2 and for
all the Kantronics tncs.
I do not know if John provides any extended KISS images for AEA tncs.

We mostly use mfj-1270B or KPC-3, these seem most cost effective.
Starting to use a few KPC-9612 now they are available.
For the 9600 links, we use Data Engines, MFJ-1270B's with the MFJ
modem, or kpc-9612. We have played with 19k2 on some of the shorter
links, but not had good success. Lots of mountains, long hops, means
lots of reflection problems. Most backbone links use yagis, in some
cases more than one.

I probably missed a few tnc / modem types - we don't keep careful
track of WHAT people put on air, but do keep careful track of how
well it works ...

   ... Hank

--

Hank Oredson @ Mentor Graphics   Library Operations
Internet   : hank_oredson@mentorg.com   "Parts 'R Us!"
Amateur Radio: W0RLI@W0RLI.OR.USA.NOAM

128. Re: Abandoning The Network Goals

From: ka7oei@uugate.wa7slg.ampr.org
Date: Wed, 20 Jul 94 12:47:27 mdt
To: netsig@tcet.unt.edu

Message-ID: <94426@uugate.wa7slg.ampr.org>
Rendered body type: text/plain

On Tue, 19 Jul, Steve Sampson said:
>... There is no amateur radio
>network infrastructure being built to support speeds of 1 Meg or 10 Meg
>systems. ...

Wellll.... I beg to differ.

For the past year, we have been working on something a bit faster than 1k2, 9k6, or 57k6.

In Feb. '93 the local packet network was a mess (it still is, but change is drawing nearer... We have piles of gear, but not enough man-hours to throw it all into service at once...) with there being NOTHING above 1200 baud in the Salt Lake area. Ironically, rural Eastern Utah has been running 9k6 for several years...

At this meeting, several things were decided:

- 1200 baud sucks rocks. Simply put, its speed makes it unuseable for practical multi-user real-time system that comes anywhere near its saturation point. (Somone help me. On a CSMA system, assuming NO hidden terminals, what is the "saturation" point as a percentage? (I.E. the point at which throughput starts going down...)) There is simply not enough bandwidth to support reasonably intelligent high-level protocols. >From a realistic standpoint, it *MUST* be supported because that is what most people have and it is therefore important to support it to a reasonable degree, bearing in mind its limitations.

- 9600 baud is passe'. It has been around for years and, if implemented in the same bad way as the 1200 baud systems, it would be simply a more expensive system that also sucked rocks. As a user-interface, it is pretty nice and it begins to support the more intelligent protocols without "maxing out" on protocol overhead. However, it is *not* what we considered to be adequate for connecting large metro areas with lots of users together. 9k6 is simply NOT up to the task of handling the newer services (WWW/mosaic/etc.) that will be desired in the future. (You *ARE* planning to be able to do more than just connect to you local BBS and read your mail, AREN'T YOU!!!???) For linking, 9k6 comes in to tie the local 1k2 nodes together. Because of Geographical and Demographical quirk, the various 1200 baud subnets CAN be tied together on a HDX 9k6 frequency with no hidden terminals. (We have taken the divide-and-conquer approach on 1k2 with local areas being given access to the "network" on their own local (HDX) frequency. These areas are small enough (again, valley geography helps...) that hidden terminals aren't too much of a problem as long as people don't use a rubber-duck-in-a-basement-on-an-HT. Even at that, each area has at LEAST 2 frequencies that give identical levels of access.

- 56 kbaud is getting there. The only place this is being put it, however, is to link to the Eastern part of the state (remember that older 9k6 network that has been around?) and toward Colorado. The repeater is going to be used to tie this (and other) valleys together (a 222 MHz, inband 56kbaud repeater). Unfortunately/fortunately (depending on your viewpoint) this repeater site, although being a good "linking" site, is not a good repeater site for much of the valley. It goes see a huge geographical area, though... The pieces of this repeater are being assembled as I write this. This will hopefully be up before the snow falls (or else we'll have to borrow a Sno-Cat...)

- Next week we hope to begin some extensive testing of a 13cm T1 (well, ok, its only 1,499,500 baud...) full-duplex link. The modems have been built (10/93) for a while. This system is being tuned up (using some modified 1.8 gig commercial gear... Farinon SS2000, if you really care to wonder...) for a split on 2307.5 and about 2420.0 MHz. The 2 gig gear will be used for "local" linking (<30 miles or so) to tie other points together. This gear (circa 1969) was donated and has been well proven. Sure, its old, but it works very well AND it is VERY easy to modify. The T1 modems (the design of which is expected to be changed somewhat after the initial testing...) are on somewhere between the 9600 baud modems and the 56kb GRAPES modems as far as ease of alignment... Actually, it could probably be all done with a DVM if one had to, but a 'scope really helps. The longer paths (30-110 miles) will be bridged by some awaiting 3 gig (about 3.5 watts) and 5.7 gig (about 1-2 watts) modified gear as well.

Of course, Gracilis P10's are used at each end for routing as there is nothing else that will handle this sort of load.

No, a PC simply won't handle it...

This obviously leaves a gap in the middle: The user access goes up to
9600 baud and 56 kbaud. We would like something higher, but being so busy
with other things, we haven't looked too closely at what TDMA system may
be appropriate for amateur use, or (more likely) how one would need to
be derived/modified to make it reasonable to use. That is a logical next stelp..

<Clint>

Internet: clint@uugate.aim.utah.edu
Amprnet: ka7oei@uugate.wa7slg.ampr.org

129. Re: Nos as a Switch.

From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
Date: Wed, 20 Jul 94 12:45:10 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <9407201245.ZM19797@hanko>
Rendered body type: text/plain

On Jul 20, 2:38am, TAPR Network Special Interest Group wrote:
> Subject: Re: Nos as a Switch.
> From: Tim Baggett <wbaggett@NMSU.edu>
> Subject: Re: Nos as a Switch.
> To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
> Date: Tue, 19 Jul 1994 16:15:57 -0600 (MDT)
>
> On Tue, 19 Jul 1994, TAPR Network Special Interest Group wrote:
>
> > From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
> > Subject: Re: Nos as a Switch.
> > To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
> > Date: Tue, 19 Jul 94 11:15:45 PDT
> > >
> > >
> > The network switching functions operate at interrupt priority.
> > The other functions the computer performs do not.
>
> I believe incoming packets are processed at interrupt priority, but
> doesn't the further routing of such packets and the processing of the
> packets (IE what does the PC do with the receive packet) take place in
> 'normal' CPU time?

No, the processing that does not occur at I/O interrupt time takes place
off a timer tick interrupt. At least this is how the G8BPQ switch works.
There are a few operations that only occur when the application polls the
switch, but these actually take place in the application interface portion
of the switch code (BPQHTNC2 or other). I don't use that code, but
provide my own (YTNC) which handles things a little differently.

In any case, the operations that take place in "user spacetime"
are all things that do not affect the switching of packets in the network.

> >
> > Under high network load, other operations will slow down.
> > I don't see that happen very often.
> > >
>
> I have seen what I believe is skipped interrupts and hence dropped
> packets on a busy network. I believe that places an unnecessary load on
> the network.

In the BPQ code, this situation will show up in the stats report
as (forgot his exact term) missed timer ticks, or as overrun/underrun.
If I do a bunch of floppy operations, then this problem will show up,
if the system is under heavy load.

BTW - I lied about the number of radios on my 386DX25 - it is actually
seven - tend to forget about that little TEKK radio hanging off the
back of the table ...

   ... Hank

--

Hank Oredson @ Mentor Graphics   Library Operations
Internet   : hank_oredson@mentorg.com   "Parts 'R Us!"
Amateur Radio: W0RLI@W0RLI.OR.USA.NOAM

130. Re: Abandoning The Network Goals

From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
Date: Wed, 20 Jul 94 12:08:17 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <9407201208.ZM19760@hanko>
Rendered body type: text/plain

On Jul 20, 3:04am, TAPR Network Special Interest Group wrote:
> Subject: Abandoning The Network Goals
> From: ssampson@sabea-oc.af.mil (Steve Sampson)
> Subject: Abandoning The Network Goals
> To: netsig@tcet.unt.edu
> Date: Tue, 19 Jul 1994 17:26:15 -0500 (CDT)
>
>
> > I've seen NOS (NOS, JNOS, WNOS) in operation, and have run it myself. I'm
> > not impressed. It does very little of what my users want, and when they
> > were given the choice they never used the NOS system.
>
> Yes I agree. We should not develop any more networks. We should keep using
> Net/Rom because it works real good with my VIC-20. I get really pissed off
> when people advocate more sophisticated networks. By golly CW is the only
> way to go. When I saw NOS I got so scared that I wet my pants. Just think
> if this idea took off! By golly. If I couldn't use my VIC-20 and black and
> white TV to "network" I might have to sue the sysop. I'm with Hank! Let's
> stop all this foolishness. If I have to buy another computer my Wife may
> have to increase my allowance! There should be NO improvement in networking,
> we should stay at 30 baud forever by golly. If I really need to transfer
data
> I can do it with CW by golly. I just got a copy of TheNet from a buddy of
> mine. He says it was stolen from a company that tried to get us Hams to pay
> for our software. Well, by golly, I won't stand for it. Can anyone help me
> install it on my VIC-20 by golly. . . (you get my drift I'm sure)

Oh gimme a break!

I use tcp/ip and the associated applications all day long at work,
on my Sun SPARC10, HP-PA 735, and 80486DX33. It tends to work just
fine for what I need to do at work. It does almost NONE of the things
I want to do at home - I mean there isn't even a simple CLOVER driver
for the SPARC!

Seems like you ignored the thrust of my comments.

My hardware at home has plenty of horsepower to run any application
that is available for any of the ham radio network protocols.
The applications my users want to use are NOT available with tcp/ip.
When they are, then I'll consider tcp/ip again.

> This past group of messages has disturbed me. It seems that many amateurs
> are still firmly entrenched in the glass TTY user interface. The reason your
> users didn't like NOS Hank was because they interfaced with it through an
> AX.25 connection. They did not use an application layer sitting on top of
> the network; they used an application that was below the network layer.
> The poor slobs probably can't even spell IBM or ATARI or APPLE. They can
only
> spell Commodore. So you people seem to be saying that these unsophisticated
> users are what is driving amateur packet radio? That we shouldn't be any
more
> sophisticated than an application that can interface to a CW network layer?
> The reason your users did not interface with an application on top of the
> network layer is because the amateur packet radio network is incapable of
> supporting this. There is no damn way a Windows or Mac is going to interface
> with another computer using a 1200 baud rate. So yes, your users will see no
> advantage to using NOS over a BBS. They are equivelant at 1200 baud. They
> are crap. Everything turns to crap when you force it down a pipe that is
> 1000 sizes to small. If you tried to put a chicken through a 1/16" pipe you
> will get crap.

Bull. I said no such thing. They "interfaced to it" by running NOS
on their own machine. It supplied little or nothing of what they wanted,
so they now run other applications on their own machine.
What 1200 baud rate? If you read what I wrote, you would have noticed
that I have nearly as many 9600 baud ports as 1200 or 750 baud ports.

Don't tell me that faster networking will fix this - it will not.
The applications do not at present exist, and the network infrastructure
to create them does not exist. I write applications. When the network
infrastructure improves, I'll write applications that take advantage of it.

> That means things have to change. The idiots with pop-up nodes and gang
fights
> to control a frequency are obsolete. Any 9 year old child can operate a
Net/Rom
> and they do. Every day sees a new Node pop up or a BBS appear on the user
> frequency. This is packet radio today. Where are we going when the old men
> and their BBS die off? What role will computer networks play in amateur
radio?
> The answer so far has been that there is no roll: computer networks should be
> done over wire - not radio. For radio we must use a BBS. Some people (me)
> feel that there is something missing. There is. There is no amateur radio
> network infrastructure being built to support speeds of 1 Meg or 10 Meg
> systems. There have been many articles published showing that practical
> methods are available to achieve these speeds but the amateur community has
> changed from innovators to appliance operators. Until these high speed
> systems can be purchased and self-calibrate, the current ham population will
> be unable to operate them. But I think this is where we need to be headed.
> We've already done Net/Rom, BPQ, and BBS. What's next? Death?

Gee ... we do NOT have these problems in our part of the country.
Folks cooperate to create the best possible network given the available
technology. "Available" means "I can buy it" ... so we are mostly at
9600 baud for backbones, provide 9600 baud for those users who want it,
provide 1200 for the users who want that, and provide 750, 300, 200,
and 100 baud links where those are appropriate. I don't think we have
any 45.45 baud links anymore though. Replace "baud" by "BPS" where appropriate
 - I do know the difference - but figured I'd better let you know.

So from the viewpoint of the application developer - you didn't say
anything useful. I do NOT care what transport protocol runs under my
application. Give me a transport protocol better than NET/ROM and I will
make use of it. At this point in time, there IS nothing better available.
So I use NET/ROM where it is appropriate, CLOVER/AMTOR/PACTOR/GTOR where
those are appropriate, and will use anything else WHEN IT BECOMES AVAILBLE.

And there is the challange for this group: "I want my tcp"
Once you networking folks figure out how to make it available, then we
application developers will be glad to use it. Given the choice, I would
write client/server code over Berkeley sockets. I'm not given that choice.

   ... Hank

--

Hank Oredson @ Mentor Graphics   Library Operations
Internet   : hank_oredson@mentorg.com   "Parts 'R Us!"
Amateur Radio: W0RLI@W0RLI.OR.USA.NOAM

131. Re: Be nice, boys and girls!

From: Greg Jones <gjones@tenet.edu>
Date: Wed, 20 Jul 1994 21:33:57 -0500 (CDT)
To: netsig@tcet.unt.edu
Message-ID: <199407210233.VAA18363@Kay-Abernathy.tenet.edu>
Rendered body type: text/plain

According to TAPR Network Special Interest Group:
>   Pardon me for opening a new topic, but before it goes
> too far, could we argue just a tiny bit less here and post
> practical suggestions/ideas/solutions just a tiny bit more?

I second the motion.

Greg

132. Re: Be nice, boys and girls!

From: roberts@ses6a.bt.co.uk
Date: Thu, 21 Jul 1994 10:03:35 +0100
To: netsig@tcet.unt.edu
Message-ID: <9407210905.AA188573@tcet.unt.edu>
Rendered body type: text/plain

>From: NAME: Dave Roberts
        FUNC: DTI14
        TEL: 0473 224566   <ROBERTS AT A1 AT SES6A>
To: "netsig@tcet.unt.edu" @ R11F @ MRGATE

Agreed.

The signal to noise ratio is a bit too low. How about we ask the kind
soul providing the facility to set up a second group called 'net-winge'
so we can find the interesting bits.

Dave
G8KBB

133. Re: Be nice, boys and girls!

From: gjones (Greg Jones WD5IVD)
Date: Thu, 21 Jul 94 10:19:37 CDT
To: netsig
Message-ID: <9407211519.AA190068@tcet.unt.edu>
Rendered body type: text/plain

After seeing Dave's message, I thought I had better translate for a few
of the group.

Informal Def: winge

Is someone who complains or just sets around and whines in general
about things.

Very English pharse. When more than one winge-er gets together at the pub
for a pint, it is called a wingeing-session (sp?). Winger's feed on
each others comments. Thus one winger can stimulate conversation for
several pints of drinking.

So - don't be a WINGE-ER.

Greg

--

Always knew I learned something when I was at UoSAT. :-)

134. Re: Kiss Code

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Thu, 21 Jul 1994 10:51:24 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9407211042.A20095-0100000@kazak>
Rendered body type: text/plain

On Wed, 20 Jul 1994, TAPR Network Special Interest Group wrote:

> From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
> Subject: Re: Kiss Code
> To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
> Date: Wed, 20 Jul 94 12:34:44 PDT
>
> On Jul 20, 1:31am, TAPR Network Special Interest Group wrote:
> > Subject: Kiss Code
> > From: Sperry Davis <sperry@pinn.net>
> > Subject: Kiss Code
> > To: netsig@tcet.unt.edu
> > Date: Wed, 20 Jul 1994 00:12:46 -0500 (EST)
> >
> > >   I RUN the BPQ switch. It is much faster than the 9600 baud node
> > >connected to it. And there are now GOOD new versions of KISS that do work
> > >well if not good...
> >
>
> In most tncs, we (the Portland metro network) are using the
> extended KISS provided by G8BPQ - the key feature is that it
                           ^^^^^

> allows the switch to know the state of packets pending xmit
> in the tnc, thus solving the main problem of the original KISS
> implementation.
>
> I probably missed a few tnc / modem types - we don't keep careful
> track of WHAT people put on air, but do keep careful track of how
> well it works ...
>
>   ... Hank
        Hank we do need to say DO NOT USE THE KISS THAT COMES WITH THE
TNC!!! I just got w5raf on tcp/ip and it works fine BUT, it drops the
first few characters of received data. He is using a MFJ 1274 and using
the e-prom which came with the tnc. When I can get up to Bob's place I

will give him the g8bpq kiss and solve his problem.

When setting up my 9600 baud tnc for the home node having already 2 1200 baud ports, I used the old TAPR kiss to make an e-prom for the tnc. When everything was done I started forwarding over the 9600 baud tnc and got lots of "checksum errors" when forward TO other bbs. No problem seemed to be present when guys forwarded TO me.

I decided to see if the kiss was the problem, and it was. I put in an e-prom with the g8bpq kiss and all those problems disappeared. So I say I have proof that you better use the right kiss if you want things to work...

-karl k5di

135. Re: Be nice, boys and girls!

From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
Date: Thu, 21 Jul 94 10:10:59 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <9407211010.ZM21025@hanko>
Rendered body type: text/plain

On Jul 20, 10:21pm, TAPR Network Special Interest Group wrote:
> Subject: Re: Be nice, boys and girls!
> From: Greg Jones <gjones@tenet.edu>
> Subject: Re: Be nice, boys and girls!
> To: netsig@tcet.unt.edu
> Date: Wed, 20 Jul 1994 21:33:57 -0500 (CDT)
>
> According to TAPR Network Special Interest Group:
> > Pardon me for opening a new topic, but before it goes
> > too far, could we argue just a tiny bit less here and post
> > practical suggestions/ideas/solutions just a tiny bit more?
>
> I second the motion.

Yes, it would have been nice to have heard your opinions
on one or more of the topics under discussion, rather than
this "general whine" about how hard it is to understand
irony ... so ... to get back on track.

1. What can be done to garner support from the population
of users at large - these new things we all want to do
will require funding, and will require users to "do something
different than they do now."

2. We have an existing network based on the NET/ROM layer 3
Layer 4 protocol. Many people in this group would like to
replace that with a network based on tcp/ip.
How can this be accomplished? We all understand how this
could be done technically, no rocket science there, but how
can it be done organizationally, politically, economically?

3. "tcp/ip is better than NET/ROM". Perhaps, perhaps not.
If it is, then actual experiments - holding all things
constant except protocol - will bear this out. Has anyone
done these experiments? If so, please post results.

4. At layer 1, most of our networks have serious problems.
There are well known solutions to many of these problems.
The folks who build most of our networks do not understand
the problems, much less the solutions. How can we fix this?

5. How do we go about commercializing some of the interesting
solutions in 4. ? Many of our networks have no local hardware
guru available to build radios/modems/computers/you_name_it.
Those networks are, and will continue to be, part of "the network":.
How can we encourage manufacturers to make these new solutions
available at reasonable prices?

These are issues I've seen discussed in the past two days.

... Hank

--

Hank Oredson @ Mentor Graphics Library Operations
Internet : hank_oredson@mentorg.com "Parts 'R Us!"

Amateur Radio: W0RLI@W0RLI.OR.USA.NOAM

136. Re: Kiss Code

From: ahgroff@dz12.cca.rockwell.com (A.H.Groff)
Date: Thu, 21 Jul 94 15:18:08 CDT
To: netsig@tcet.unt.edu
Message-ID: <9407212018.AA19518@dz12.cca.rockwell.com>
Rendered body type: text/plain

So where is the RIGHT KISS available at ??
IS it unique to BPQ or does it work with other thinks that us kiss but
not BPQ ??
 If its work better that the kiss we have been using , how do we get merged into
new mass market TNC's ?

Tell me more ...

AL, K0VM

137. ROSE vs TheNET?

From: Rob_Reid@mindlink.bc.ca (Rob Reid)
Date: Thu, 21 Jul 94 13:43:43 -0700 (PDT)
To: netsig@tcet.unt.edu
Message-ID: <m0qR51C-0003LeC@rsoft.rsoft.bc.ca>
Rendered body type: text/plain

Gentlemen:

Up here in the Vancouver Lower Mainland area we have always had a fairly
stagnant network but over the past year have formed a packet club with over
110 members and now slowly building a network complete with backbones etc
with
the influx of membership funds. The network is slowly taking shape with
DataEngines running BPQ Firmware and TNC2 compatibles running TheNET X-1J
Release 2. This is our current platform for the forseeable future. Now
here is the scenerio that concerns me.

The local telephone pioneers are constructing a network and backbone from
the
Vancouver lower mainland area to the central part of our province using
telco
microwave radio sites to host the UHF backbone equipment. I believe each
of
the microware sites will also have a 1200 port for the local area. This
group in planning to use ROSE Firmware in their DRSI TNC2 compatible boxes.
I have
no expertise in ROSE and haven't really had time to burn some EPROMS and
run it on a test bed. I would be interested in your comments about both
type of
Networking Firmware especially regarding the strengths and weaknesses of
each.
At each end of this network will be TheNET networks and the mail systems
will
be FBBS.

The telephone pioneers initial concept for this network is for emergency
passing of traffic and files related to an emergency situation, keyboard to
keyboard stuff and passing of personal mail from the various bbs systems
along the way.

If any of you have any incite and offer your words of wisdom, it would be
most
appreciated.

Thanx for taking the time to read this note.

Regards

Rob
VE7FU
VE7ROB
VE7SRY

--

Canadian Airlines International Flt Ops
Internet: Rob_Reid@mindlink.bc.ca
Compuserve: 72205,376

Packet Radio: VE7FU@VE7ROB.#VANC.BC.CAN.NA
---

138. Re: Kiss Code

From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
Date: Thu, 21 Jul 94 15:45:23 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <9407211545.ZM1243@hanko>
Rendered body type: text/plain

On Jul 21, 3:51pm, TAPR Network Special Interest Group wrote:
> Subject: Re: Kiss Code
> From: ahgroff@dz12.cca.rockwell.com (A.H.Groff)
> Subject: Re: Kiss Code
> To: netsig@tcet.unt.edu
> Date: Thu, 21 Jul 94 15:18:08 CDT
>
> So where is the RIGHT KISS available at ??
> IS it unique to BPQ or does it work with other thinks that us kiss but
> not BPQ ??
> If its work better that the kiss we have been using , how do we get merged
into
> new mass market TNC's ?

It is in the G8BPQ releases, at least for TNC2 (and clones).

EPROM images for the KPC tncs are available from Kantronics.

I presume G8BPQ owns it ... and may or may not be willing to
allow others to distribute.

There is also a spec in the bpq docs, so perhaps others could
duplicate the new KISS functions ... and yes, it is downward
compatible.

   ... Hank

--

Hank Oredson @ Mentor Graphics   Library Operations
Internet   : hank_oredson@mentorg.com   "Parts 'R Us!"
Amateur Radio: W0RLI@W0RLI.OR.USA.NOAM

139. Re: Kiss Code

From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
Date: Thu, 21 Jul 94 15:45:23 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <9407211545.ZM1243@hanko>
Rendered body type: text/plain

On Jul 21, 3:51pm, TAPR Network Special Interest Group wrote:
> Subject: Re: Kiss Code
> From: ahgroff@dz12.cca.rockwell.com (A.H.Groff)
> Subject: Re: Kiss Code
> To: netsig@tcet.unt.edu
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--

Hank Oredson @ Mentor Graphics   Library Operations
Internet   : hank_oredson@mentorg.com   "Parts 'R Us!"
Amateur Radio: W0RLI@W0RLI.OR.USA.NOAM

140. Re: Kiss Code

From: Adrian Godwin <agodwin@acorn.co.uk>
Date: Fri, 22 Jul 1994 10:01:30 +0100
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <9407220901.AA14878@snark.acorn.co.uk>
Rendered body type: text/plain

>
> I presume G8BPQ owns it ... and may or may not be willing to
> allow others to distribute.
>
> There is also a spec in the bpq docs, so perhaps others could
> duplicate the new KISS functions ... and yes, it is downward
> compatible.
>

G8BPQ's KISS is based on K3MC's - I understand that someone has obtained
permission to distribute the modified sources and is intending to put
them up for ftp shortly.

As far as reliability goes, I don't know that he's fixed bugs that
were in the original code (though it may be better than other vendor's
products). The protocol changes may help in some areas, and he's
tackled a problem with buffer overruns by forcing a reset when buffer
space is exhausted. If the k3mc code provides the functionality you
want, though, the bpq code may not be a substantial improvement.

-adrian

141. RE : Getting back on course

From: roberts@ses6a.bt.co.uk
Date: Fri, 22 Jul 1994 10:08:31 +0100
To: netsig@tcet.unt.edu
Message-ID: <9407220911.AA128840@tcet.unt.edu>
Rendered body type: text/plain

>From: NAME: Dave Roberts
        FUNC: DTI14
        TEL: 0473 224566   <ROBERTS AT A1 AT SES6A>
To: "netsig@tcet.unt.edu" @ R11F @ MRGATE

Hank wrote :

>>From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
>>Subject: Re: Be nice, boys and girls!

>> (text deleted)

>>2. We have an existing network based on the NET/ROM layer 3
>>   Layer 4 protocol. Many people in this group would like to
>>   replace that with a network based on tcp/ip.
>>   How can this be accomplished? We all understand how this
>>   could be done technically, no rocket science there, but how
>>   can it be done organizationally, politically, economically?

One of the main reasons I put the IP router into TheNet X-1 was to
encourage just this. I know they are slow, but there's lots of
TNC2 nodes out there. Many have switched to X-1, but the IP router
is switched off. Encourage nodeops to enable it. The whole point
for having netrom in there as well is to encapsulate IP frames
in netrom where there are netrom portions of the network that
run plain netrom. (not optimum but it works. Better to have something
that works than nothing). You can have a significant amount of IP network
almost overnight. I know that ARP is not complete, but if there is
a demand (and *no-one* has asked for it), it can be completed. With
that in place, you could then, over time, replace the nodes with
something a bit more up to date running faster. Organisationally,
I recognise that this group is basically a US group and I do not
have good visibility of the organisations over the pond, but I
know that several large ones exist. Contact them. Don't feed them
the religious fervour, just a simple message. One thing I have

learnt from observing some of the US nodeop groups is that you chaps
are really quite good at organising this.

>>3. "tcp/ip is better than NET/ROM". Perhaps, perhaps not.
>>   If it is, then actual experiments - holding all things
>>   constant except protocol - will bear this out. Has anyone
>>   done these experiments? If so, please post results.

It is very easy to show that IP is better than Net/Rom. It is very
easy to show the opposite. I can concoct experiments both ways. I
would suggest that we have better things to do with our time. Use
what we have. Get it giving its best then improve it. At the moment
we fail to use most of the capabilities we have.

>>   ... Hank

Dave

142. X1J - does it work?

From: vodall@mtewe.UUCP
Date: Fri, 22 Jul 1994 03:04:13 -0700 (MDT)
To: NETSIG TAPR <netsig@tcet.unt.edu>
Message-ID: <m0qRGWe-0002koC@mtewe.kevin.mt.us>
Rendered body type: text/plain

I recently noticed the author of X1J responding to a queary here.
That's great! As I have a question that he, or some other TheNet
guru might be able to answer.

Being inflicted with the terminal disease of TCP/IP I was excited to
read about the possibilities of the new Node software (X1J) with its
built in IP router.

After a little experimentation I was long and loud in my praise of the
system and advocated that existing nodes be converted.

Many in the state have been. But not with universal success. One
slowed down traffic going to the west so much that an extra trip of
over 100 miles was undertaken by the node-op to return the system
to TheNet Plus.

The software seems to lock up, hold onto a packet(s) and not transmit
them until it's good and ready. This characteristic has been observed
at all the nodes now running X1J.

I'm hoping there's something in our configuration that's causing this and
we can fix it with a parameter adjustment. The configuration is essentiall
the default that comes with the released package. Our CPU speed seems
adequate (mid 300's) and there are plenty of buffers (500+) when the
status is checked. The TNC's are running 4 mhz and are only going
1200 baud.

Another problem is that the nodes will disconnect (DM) a user if it
gets even moderately busy - like 2 or 3 users. Something else must
be set too tight to cause this to happen.

Any suggestions please???

Bill - WA7NWP
--

(vodall@bigsky.dillon.mt.us)

143. Re: X1J - does it

From: broderic@codger.physics.duq.edu (Don Broderick [N3GUZ])
Date: Fri, 22 Jul 1994 14:20:12 -0400 (EDT)
To: netsig@tcet.unt.edu
Message-ID: <9407221820.AA17835@codger.physics.duq.edu>
Rendered body type: text/plain

>
> From: vodall@mtewe.UUCP
> Subject: X1J - does it work?
> To: NETSIG TAPR <netsig@tcet.unt.edu>
> Date: Fri, 22 Jul 1994 03:04:13 -0700 (MDT)
>
>
>

> I recently noticed the author of X1J responding to a queary here.
> That's great! As I have a question that he, or some other TheNet
> guru might be able to answer.
>
> The software seems to lock up, hold onto a packet(s) and not transmit
> them until it's good and ready. This characteristic has been observed
> at all the nodes now running X1J.
MUCH Deleted here... db   >
> Any suggestions please???
>
> Bill - WA7NWP
> --
> (vodall@bigsky.dillon.mt.us)
>

Not really a suggestion, just a couple of comments:

(I should preface my remarks by saying that this isn't a rip on X1J--
        it's rather good code, and it makes a superb use of the TNC's
        resources.)

I don't enjoy using X1J for IP because of its handling of ARP and its
fragmentation of IP packets. Each time a station wants to try IP on the
X1J channel, we must manually add an ARP entry.

The only suggestion which I have to replace this is the use of a dedicated
PC router; this is not possible in many cases.

Once again, X1J is wonderful in other applications; it is, however, only
adequate for IP in my estimations.

144. Re: X1J - does it

From: mfoster@amoco.com (Michael H. Foster)
Date: Fri, 22 Jul 94 13:33:19 CDT
To: netsig@tcet.unt.edu
Message-ID: <9407221833.AA02139@gp3.trc.amoco.com>
Rendered body type: text/plain

We have around 10 X1J nodes in this area and see similar problems.
Also, at least 3 suffer from "dribbiling buffers" to the point of
shutdown. When the buffers are low, the node returns a busy for stations
trying to connect using the bbs alias.

We have been trying to pin down the dribbling by limiting heard list,
limiting nodes lists, and other things without much success.

Bill, you might send your parms and mode info along. I will try to get ours
for you to compare with, but it is very close to default parameters.

Two nodes carrying extensive traffic seem to work without a hitch leaving me
wondering what the !$%#.....

- Mike, wa5txx

mfoster@amoco.com

145. Re: RE : Getting back on course

From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
Date: Fri, 22 Jul 94 11:34:47 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <9407221134.ZM2443@hanko>
Rendered body type: text/plain

On Jul 22, 12:26pm, TAPR Network Special Interest Group wrote:
> Subject: RE : Getting back on course
> From: roberts@ses6a.bt.co.uk
> Subject: RE : Getting back on course
> To: netsig@tcet.unt.edu
> Date: Fri, 22 Jul 1994 10:08:31 +0100
>
> >From: NAME: Dave Roberts
>   FUNC: DTI14
>   TEL: 0473 224566   <ROBERTS AT A1 AT SES6A>
> To: "netsig@tcet.unt.edu" @ R11F @ MRGATE
>
> Hank wrote :
>
> >>From: hank_oredson@rainbow.mentorg.com (Hank Oredson)

> >>Subject: Re: Be nice, boys and girls!

> It is very easy to show that IP is better than Net/Rom. It is very
> easy to show the opposite. I can concoct experiments both ways. I
> would suggest that we have better things to do with our time. Use
> what we have. Get it giving its best then improve it. At the moment
> we fail to use most of the capabilities we have.

The point I was making was that I hear frequent claims that
tcp/ip is better than NET/ROM. If one protocol is indeed better
than the other, for some particular situation or purpose, then
we should use the superior protocol. However, I have never seen
any data to back up these claims. If we have something better to
do with our time than improve the network, please tell what we should
be doing instead.

The reason I post to this group is to help the "networking nerds"
understand what us "application nerds" are doing. If all the networks
suddenly changed to tcp/ip, that would break a lot of existing
applications.

Just a point of curiosity: does X1J also encapsualte NET/ROM node
broadcasts through the tcp/ip portions of the network? i.e. is it
"protocol transparent" in both directions?

   ... Hank

--

Hank Oredson @ Mentor Graphics   Library Operations
Internet   : hank_oredson@mentorg.com   "Parts 'R Us!"
Amateur Radio: W0RLI@W0RLI.OR.USA.NOAM

146. Re: Kiss Code

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Fri, 22 Jul 1994 11:05:34 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9407221012.A6384-0100000@kazak>
Rendered body type: text/plain

On Thu, 21 Jul 1994, TAPR Network Special Interest Group wrote:

> From: ahgroff@dz12.cca.rockwell.com (A.H.Groff)
> Subject: Re: Kiss Code
> To: netsig@tcet.unt.edu
> Date: Thu, 21 Jul 94 15:18:08 CDT
>
> So where is the RIGHT KISS available at ??

        It comes in the software package from G8BPQ. This package that is
usually .zip is available from most telephone ham servers and from
ftp.ucsd.edu for years.

> IS it unique to BPQ or does it work with other thinks that us kiss but
> not BPQ ??

        This is a kiss e-prom that plugs into your tnc. If you have a
mass market TNC then note it's maker's name and see if John Wise has one
for it. To use it just plug in the e-prom. If you cannot program an
e-prom then check with hams local to you for one that can.

> If its work better that the kiss we have been using , how do we get merged into
> new mass market TNC's ?

        I don't know how to make anyone use this software.

>
> Tell me more ...
>
> AL, K0VM
>
>

        -karl k5di

147. x1j nodes

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Fri, 22 Jul 1994 15:38:42 -0600 (MDT)
To: Sig Networking <netsig@tcet.unt.edu>
Cc: roberts@ses6a.bt.co.uk
Message-ID: <Pine.3.89.9407221546.A9377-0100000@kazak>
Rendered body type: text/plain

I wish to thank Dave Roberts for his work in making the x1j node
software function so well. I have 1 in a tiny-2 tnc running 1200 baud and
it's set up by me to be the router for all tcp/ip stations in our area.
It makes the route and arp lists 2 lines long for all the users.

        I enjoy doing a ping cab when I get home and the return time is
listed and I know things are still up. It's not certain that the x1j node
is faster sending an smtp than a plain netrom node, but it is true that
the x1j node is RELIABLE! I put up this node in a snow-storm and here
it's hot and nice and that node has NEVER failed. So this is a
testimonial to Dave Roberts and a big THANKS from the gang in Las Cruces,
New Mexico and El Paso, Texas.

        Keep up the good work Dave and have fun.

-karl k5di

148. Inna box...

From: KY1TLuck@aol.com
Date: Fri, 22 Jul 94 19:04:30 EDT
To: netsig@tcet.unt.edu
Message-ID: <9407221904.tn50857@aol.com>
Rendered body type: text/plain

Greetings, gang. I spotted an advertisement for "Internet in a Box"
software recently, and then requested a file on it. What struck me
interesting about it was the possibility of MAYBE, just MAYBE being
able to use it for Amateur Radio TCP/IP purposes.

They're naturally fond of frequently mentioning how it can be used
with ANY TCP/IP transport mechanism, but I thought I'd ask you
folks before getting unduly excited.

Here's some of their commentary:

WHAT KIND OF SYSTEM DO I NEED TO USE IBOX?

To use the single-user package, you need the following:
*   MS-DOS 3.0 or later
*   Windows 3.1 or later
*   4 MB of RAM
*   9600 baud modem or greater

The AIR Series providesan easy-to-use Microsoft Windows interface
that frees you from having to remember and type in complex Internet
commands. With AIR Telnet and AIR Gopher, you can log into other
computers on the Internet and access public databases and library card
catalogs. With Network File Manager(file transfer), you can copy files
as easily as you would within Windows File Manager, simply by using
your mouse to select, drag, and drop them into the appropriate
directories. With AIR News you can access any of 6,000 news groups,
where Internet users with similar interests exchange ideas and
information. With AIR Mail you can communicate directly with
anyone who has an Internet email address, including users of
CompuServe and America Online. The AIR Series makes these once-
complicated Internet applications as easy as point and click.

THE AIR SERIES

INTERNETWORKING APPLICATIONS FOR WINDOWS

"Works over any TCP/IP transport!"

The AIR Series is designed to ease the integration of the diverse
computing environments within your organization. To maximize your
organization's return on its investment, SPRY's applications
feature ease of use, the widest third-party support in the industry
and leading internetworking technology providing the ability to
work over any TCP/IP transport.

The AIR Series provides fast and reliable connectivity over any

TCP/IP transport. Seamless integration with your Windows desktop
makes the AIR Series easy-to-use and support. And the ability
to run over any TCP/IP transport reduces the total cost of your
internetworking solutions.

The AIR Series provides fast and reliable connectivity over any
TCP/IP transport. Seamless integration with your Windows desktop
makes the AIR Series easy-to-use and support. And the abilityto
run over any TCP/IP transport reduces the total cost of your
internetworking solutions.

FTP/RCP Servers
Enables other PCs or UNIX hosts ftp and rcp access to your PC.
Logs and displays session activity.

AIR Mail
An easy-to-use Windows interface for Internet mail lets you send
electronic mail throughout your organization or around the world.
o   Connect to aPOP3 server on your host, eliminating the
    need for expensive gateways
o   Easily attach binary and ASCII documents to your mail
    messages
o   Commonly used functions (such as read, compose, reply and
    print) are integrated into the Toolbar for point-and-click
    convenience
o   Customize the fonts for mail messages and the display of
    mail message listings
o   Address your messages using address books for frequently
    used private and public Internet addresses
o   Automatically attach a signature file with pertinent
    contact information to your mail messages
o Automatic notification of new mail
o   Includes custom reply to messages, forwarding, deleting
    and saving of received messages

Interoperable Solutions
The industry standard TCP/IP transports from Microsoft and
Novell andthe capabilities of APP2SOCK combine to shield you
from the underlying complexity of your internetworking architecture
and enable a flexible and easy-to-use solution that meets your
needs. This powerful foundation for the AIR Series assures you
the widest support for third-party applications and TCP/IP transports.

APP2SOCK API
The AIR Series applications support SPRY's public specification
APP2SOCK, the leading technology that guarantees interoperable
networking on the desktop. This high-layer Application Programming
Interface enables the AIR Series and compliant third-party
Windows applications to run over any TCP/IP transport. Now you
can focus on implementing the AIR Series applications rather than
concerning yourself with underlying compatibility issues.

Novellr Transport
The Novell LAN WorkPlace TCP/IP transport provides the perfect
foundation to integrate the AIR Series with your NetWare
environment.
Transport features:
o   WinSock support guarantees industry standard compatibility
    with third-party applications
o   ODI support provides seamless integration with your
    NetWare LAN
o   SLIP/PPP enables easy remote access to hosts over asynchronous
    lines
o   Domain Name System (DNS) shields users from IP host
    addresses with easily recognizable naming schemes
oBOOTP and RARP provide central administration of IP
    addresses

And page after page of MUCH more stuff.... of course...

I've thrown back a vague question at them about how/if it will work
with "Amateur Radio TCP/IP" stuff, just to see how loudly they laugh,
or if they respond at ALL, but what I'm interesting in asking YOU folks
is what YOU think.

73

```
------------------------------------------------------------
Luck Hurder, KY1T     KY1TLUCK@AOL.COM
53 Broadview St.      "The Amateur Radio Service opens doors
Newington CT 06111    to the world for EVERYONE!"
------------------------------------------------------------
```

149. Re: Abandoning The Network Goals

From: djk@dirku.demon.co.uk (Dirk-Jan Koopman)
Date: Sat, 23 Jul 1994 07:22:28 +0200 (BST)
To: netsig@tcet.unt.edu
Message-ID: <m0qRaTd-0004gGC@dirku>
Rendered body type: text/plain

n>
> From: ka7oei@uugate.wa7slg.ampr.org
> Subject: Re: Abandoning The Network Goals
> To: netsig@tcet.unt.edu
> Date: Wed, 20 Jul 94 12:47:27 mdt

[stuff deleted]
>
> - 1200 baud sucks rocks. Simply put, its speed makes it unuseable for
> practical multi-user real-time system that comes anywhere near its
> saturation point. (Somone help me. On a CSMA system, assuming NO hidden
> terminals, what is the "saturation" point as a percentage? (I.E.
> the point at which throughput starts going down...)) There is simply
> not enough bandwidth to support reasonably intelligent high-level protocols.
> >From a realistic standpoint, it *MUST* be supported because that is what most
> people have and it is therefore important to support it to a reasonable
> degree, bearing in mind its limitations.

about 18%

150. Re: Be nice, boys and girls!

From: Douglas Fajardo <dfajardo@netcom.com>
Date: Sat, 23 Jul 1994 00:33:21 -0700 (PDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9407230035.A15803-0100000@netcom12>
Rendered body type: text/plain

Doug Fajardo
dfajardo@netcom.com

On Wed, 20 Jul 1994, TAPR Network Special Interest Group wrote:

> From: "Battles, Brian" <bbattles@arrl.org>
> Subject: Be nice, boys and girls!
> To: TAPR NETSIG <netsig@tcet.unt.edu>
> Date: Wed, 20 Jul 94 15:15:00 EDT
>
>
>   Pardon me for opening a new topic, but before it goes
> too far, could we argue just a tiny bit less here and post
> practical suggestions/ideas/solutions just a tiny bit more?
>
<stuff deleted...>
>   Grab a Post-It note, write "COOPERATE" on it, and stick
> it to your monitor case!
This thought bears repeating... I hope everyone takes a moment to do
this!

*** Doug, WB6KNY

151. Re: X1J - does it

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Sat, 23 Jul 1994 06:26:58 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9407230628.A15620-0100000@kazak>
Rendered body type: text/plain

On Fri, 22 Jul 1994, TAPR Network Special Interest Group wrote:

> From: broderic@codger.physics.duq.edu (Don Broderick [N3GUZ])
> Subject: Re: X1J - does it
> To: netsig@tcet.unt.edu
> Date: Fri, 22 Jul 1994 14:20:12 -0400 (EDT)
        Lots removed....

>
> (I should preface my remarks by saying that this isn't a rip on X1J--
>   it's rather good code, and it makes a superb use of the TNC's
>   resources.)
>
> I don't enjoy using X1J for IP because of its handling of ARP and its
> fragmentation of IP packets. Each time a station wants to try IP on the
> X1J channel, we must manually add an ARP entry.

        As a node sysop in the Las Cruces-El Paso area putting the arp
lines into the node is a positive thing. Someone else is trying NOS! I
also must add an IP line, don't you?

> The only suggestion which I have to replace this is the use of a dedicated
> PC router; this is not possible in many cases.
>
> Once again, X1J is wonderful in other applications; it is, however, only
> adequate for IP in my estimations.

        Well it seems to be a fine replacement for the Cisco Router in
ham radio. It works the same way and works fine.

-karl
k5di

152. Re: RE : Getting back on course

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Sat, 23 Jul 1994 06:38:05 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9407230632.B15620-0100000@kazak>
Rendered body type: text/plain

On Fri, 22 Jul 1994, TAPR Network Special Interest Group wrote:

> From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
> Subject: Re: RE : Getting back on course
> To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
> Date: Fri, 22 Jul 94 11:34:47 PDT
> Just a point of curiosity: does X1J also encapsualte NET/ROM node
> broadcasts through the tcp/ip portions of the network? i.e. is it
> "protocol transparent" in both directions?
>
>   ... Hank

        Yes it does Hank. x1j is in fact the TheNet code version 1.5 with
the tcp/ip router code overlayed. It is on a 512k e-prom and the Z80
address 32k limit is fixed with bank switching (a part of the tnc-2 does
the bank switching).

        The node as far as I can tell handles netrom just like TheNet
does and does the tcp stuff just like nos does. But I have not seen the
code but bet you could ask and get it.

-karl
k5di

153. Will it work?

From: KY1TLuck@aol.com
Date: Sat, 23 Jul 94 17:21:53 EDT
To: netsig@tcet.unt.edu
Message-ID: <9407231721.tn80053@aol.com>
Rendered body type: text/plain

ssampson@sabea-oc.af.mil sez:

>>This did me absolutely no good, however, unless I went through
>>another PC running NOS.

To which KY1T retorts:

Aha. You and Jon Bloom KE3Z seem to be saying much the same. His comments
are to the effect that:

>>As for the Windows stuff, I've used it here on the LAN (WinQVT, Trumpet
>>Winsock, and also EWAN--see the previous message). It works well. The
>>problem is, I know of no way to run it atop AX.25 at present. What I plan
to
>>do is to use another machine (running Linux, actually, but could as easily
>>be running NOS) to be the AX.25 box, with the Windows apps running on my

>>main machine, tied via SLIP to the AX.25 box. Unless you can do something
>>like that, I'm not sure the Windows stuff is directly usable on packet
>>TCP/IP in its current state.

So let's see... where does that leave me, with regard to running Internet in a Box, say, with it's seemingly-marvelous Mosaic, FTP,. and Telnet servers, via NOS? First I need to ask them if they support timers that work to the tune of seconds and minutes, rather than milliseconds, right? What other key questions should I be asking them, designed to determine if this will be useful for Amateur Radio applications?

LH

154. ROSE vs Whatevers

From: stewart@kepler.IFA.Hawaii.Edu (Christopher Stewart)
Date: Sat, 23 Jul 94 12:01:36 HST
To: netsig@tcet.unt.edu
Message-ID: <9407232201.AA15899@kepler.ifa.hawaii.edu>
Rendered body type: text/plain

Hsaving been running Rose here in Hawaii for some years, I find so far since we started it has always proven to be far superior to Netrom or thenet or now x1j for networking. Let me add here that I have run all four and am constantly watching out for what will work best for us. Under the concepts we use, Rose fits in the best.
Here are our concepts of what we want from our network here.
Total control over how and where the packets are sent, link to link.
Per packet overhead reduced to the minimum, forget this 20-40 bytes per packet overhead.
No broadcasting.
Allow any protocol to go thru the network without having to create seperate networks that reduce overall reliability, which allows us to create useful larger coverage links that can be used for transparent-to-the-user rerouting around link failures during times of emergencies.
Allows us to put up immediate drop points that allow users to initiate outbound connections but blocks inbound requests. This is highly useful for areas under emergency commms that want to pass traffic outward and stop inquiries coming in which can bring the comms to its knees with redundant requests. One assumes that outward traffic is higher priority than inbound.
Help files at each switch to bring a new user up to date on everything or at least where to go and how to get things on packet. A user connects directly to a switch and within one minute they get the help file if they do nothing. Remember when you were a new user? Usually they can monitor what is going on frequenc, see that the switch callsign is most often used, will attempt a connection to it. Once connected, by the time they figure out how to disconnect or if they hit their return key, the help file is sent to them. Save time on answering repeated new user questions.
Allows us to make link changes in sites, callsigns, frequencies, without having to update all the users and PBBS Sysops, because it is transparent to them. Saves us huge amount of time in this area alone when we are trying to make these changes. It used to be a nightmare.
Does not care if the user is an expert or VIC-20 user. They can access every thing equally.
Allows connection to any other kind of network or end PBBS without hassle. Even, Yuck! a digipeater.
Allows promotion of distributed end user services to be spread out across the network to maximize transport capability of information everywhere. Keeps the concept of network building has its needs (MONEY), and end use services are a totally independant service with different support needs (MONEY).
Allows us to get better network coordination with other network coordinators. I would say this is the best of all things because it makes for better packet for everyone.
I could probably say more but will stop here and say, try it, you might be surprised at what it could do for you, and we dont make use of all the possibilities either.
We still have a x1j up, but we use it only for its conferencing capability. Nothing else. Elsewhere someone has a callsign server, nothing else. Else is a mail drop, nothing else.
If something better comes up, we will try it out. But it is going to have to work better than Rose.
We are hoping the dxcluster group here will get word soon from their counter parts elswhere that using the Rose networks actually speeds up their stuff for their users. They are on the other end of our link and so do not see how well it works from our end when we make a connction.
Lastly, try it out for yourself. I trust no numbers stated and concepts. I set up some tncs with different protocols. Connect a user at each end and dump 10k-100k files thru it. Then I divide the file size by how long it took to get there. This gives me a real world numbers on how well it works based on our setup. Perhaps this is not considered to be proper thruput testing. But it

seems to me the best reality check I can do with what I have.
The bottom line, I cannot praise W2VY enough for all his work. Thank you.

Oh yes, a disclaimer. These are my opinions, and my impressions of how it
all works. I could be stating the concepts or the workings of Rose incorrectly,
and advise that you seek other Rose network sysop opinions too.
Chris/AH6GG

155. Re: X1J - does it

From: Jack Taylor <n7oo@huachuca-emh8.army.mil>
Date: Sat, 23 Jul 94 16:50:37 MST
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <9407232352.AA188380@tcet.unt.edu>
Rendered body type: text/plain

I'm towards the opposite end of the X-1J network Karl, K5DI spoke of. For
those that say they are seeing a lot of resets, I don't see that here.
Our portion of the system runs on UHF at 9k6 and seems to be VERY stable.
Once in awhile the STATS indicate a soft reset but I suppose that is due
to the TNCs running out of horsepower. The soft resets don't adversely
affect anything and the system continues to chug along.

As for having to manually enter the ARP lines, I don't see that as a
particular liability. For a LAN, there is just one gateway that has to
have the table updated for newcomers. Locally we encourage the
existing particpaants to learn how to sysop the node in case the main
nodeOp is away. This is educational for them and heigthens group
consciousness in sharing network responsibility.

I'm relatively new to the world of tcpip, but I get the impression the
significance of X-1J being able to do IP routing is lost on most of the
netrom NodeOps. Even locally, some of the IP crowd have advocated going
back to "netrom"! There is a lack of understanding of how the two
protocols interact with each other and indeed, a lack of understanding
of how each protocl works.

Thus as I see it, what is needed is a FAQ briefly outlining the basic
protocols, the significance of the effects of higher overhead supporting
'advanced' protocls, and the effects of congestion vs. overhead. Based
on this review, the FAQ could then show why it is to everyones benefit
to enable IP routing along the node system. It would also be nice if
the FAQ gave a number of examples on how to set up X-1J IP routing. I
know I spent more time than I'd care to admit in setting up my particular
system so it "works". In looking at other systems I see obvious
problems which indicate a lack of understanding by the various NodeOps
on how the IP tables should be configured. Maybe someone more familar
than I would like to take this project on?

73 de Jack

156. Re: X1J - does it

From: ron@chaos.eng.wayne.edu (Ron Atkinson N8FOW)
Date: Sat, 23 Jul 94 23:28:30 EDT
To: netsig@tcet.unt.edu
Message-ID: <9407240328.AA19101@chaos.NIS.chaos>
Rendered body type: text/plain

>> I don't enjoy using X1J for IP because of its handling of ARP and its
>> fragmentation of IP packets. Each time a station wants to try IP on the
>> X1J channel, we must manually add an ARP entry.
>
> As a node sysop in the Las Cruces-El Paso area putting the arp
>lines into the node is a positive thing. Someone else is trying NOS! I
>also must add an IP line, don't you?

It needs to learn on it's own when new users are online. This is why
manual arp statements just don't cut it. I don't have to add in arp or
route statements for NOS or Unix systems when new users come online.

>> The only suggestion which I have to replace this is the use of a dedicated
>> PC router; this is not possible in many cases.
>>
>> Once again, X1J is wonderful in other applications; it is, however, only
>> adequate for IP in my estimations.
>
> Well it seems to be a fine replacement for the Cisco Router in
>

X1J code doesn't learn on it's own who's out there and it basically requires a dedicated machine to handle it's routing. Basically a machine that has it's entry in the local X1J node, and the locals on the LAN route via that switch (not the X1J node). NETROM was added in NOS the same way, a NOS system is set up as a gateway into the NETROM network and the IP traffic is routed through that NOS switch and not through the local node. If X1J had the capability to initiate an ARP frame then it could be used as a route for a LAN without having a node op manually enter each user in the node.

Ron N8FOW

157. nos and netrom

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Sun, 24 Jul 1994 03:21:24 -0600 (MDT)
To: Sig Networking <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9407240330.C24744-0100000@kazak>
Rendered body type: text/plain

We have a problem here. I helped ka5oyo get set up as a tcp/ip system and that part is working real well now. We can smtp and ftp and ping and all that good stuff. He can connect to things using his netrom system and all that.

But we want to use this jnos version 1.10d station as a netrom link between 2 nodes. For some reason it does not work as a regular netrom node! The jnos alias is eagles and it is between 2 x1j nodes that are on the same frequency. Eagles has both nodes in it's node list. The x1j nodes have eagles in there node list.

But if I connect to one of the x1j nodes and call the other it doesn't work. For some reason the nos netrom doesn't work like a regular netrom node.

What have I done wrong??? Please help somebody....

-karl k5di

158. Manager & SYSOP - X1J

From: ac191@detroit.freenet.org (James Haight)
Date: Sun, 24 Jul 94 09:24:11 EDT
To: netsig@tcet.unt.edu
Message-ID: <9407241324.AA28570@detroit.freenet.org>
Rendered body type: text/plain

Wonder if someone could answer a couple of questions concerning the SYSOP and MANAGER commands for X1J...

First, as I interrupt the X1J DOCs, the manager is suppose to be able to preform the same commands as the SYSOP... Is this correct? How is the MANAGER's call set?

The problem we seem to be having is that when a reset has to be preformed on the Switch, the only one that can accomplish this is the sysop... The manager has the correct password, but, when issued, the switch does nothing.. (The manager command is also turned on at the Switch...)

We only switched over to X1J a couple of months ago from ROSE... We don't understand all of the commands of the X1J yet, but we are learning... However, we do need more then one person to be able to preform some of the commands... Hope this is possible...

--

Jim
ac191@detroit.freenet.org
WW8Q@WW8Q.#NWMI.MI.USA.NOAM

159. Re: Modern Windows TCP/IP and AX.25

From: ssampson@sabea-oc.af.mil (Steve Sampson)
Date: Sun, 24 Jul 1994 09:45:52 -0500 (CDT)
To: netsig@tcet.unt.edu
Message-ID: <9407241445.AA09804@sabea-oc.af.mil>
Rendered body type: text/plain

If you are interested in an effective way to run TCP/IP and AX.25 on Windows, get the file: ftp.ucsd.edu:/hamradio/packet/tcpip/incoming/ethrax25.zip

I've used this with SuperTCP (Frontier Technologies) and I can do my
college homework, play games, etc, and receive and send mail via SMTP, as
well as FTP, etc. I found that SuperTCP has the capability to adjust it's
timers to seconds and minutes while NCSA Telnet/FTP did not. Now, If we just
had an AX.25 network in Oklahoma that wasn't based on 1200 baud I'd leave it
on. The only IP networks are on the user frequency of 145.01 so no amount of
software will help this town. . .

Regarding X-1 nodes: I think they are more effective as Routers rather than
Servers. The Servers should have all the fancy routing protocols and name
servers, while the X-1 should be set up to follow "The HUB 5/29 Routing
Experiment" of the 12th ARRL CNC.

Regarding Rose: Rose at 1200 sucks. Rose like TheNet has a maximum packet size
designed for low baud rates. These small packet sizes are limits at high speed.
The data size should be longer than the keyup time. In this regard there is a
new Rose being designed for PC's and large packets. Once this is done, Rose
will cease being a toy. Most of the Rose nets around here waste the bandwidth
by ACKing each other all day and night. The channel will be quiet and the Roses
are RR'ing away with each other. This of course is the problem with Virtual
Circuit mode, but could be easily solved by the owners reading the manual (RTFM)
and backing off on the timers a bit. Course I wouldn't have to see this if they
weren't "networking" on 145.01. I think Rose or IP could do what we need, only
if used at high speed.
--
Steve

160. Re: X1J - does it

From: "Gary McDuffie, Sr." <mcduffie@hannibal.wncc.cc.ne.us>
Date: Sun, 24 Jul 1994 10:25:47 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9407241025.A17302-0100000@hannibal>
Rendered body type: text/plain

On Sun, 24 Jul 1994, TAPR Network Special Interest Group wrote:

> From: Jack Taylor <n7oo@huachuca-emh8.army.mil>
> Subject: Re: X1J - does it
> To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
> Date: Sat, 23 Jul 94 16:50:37 MST

~~some deleted~~

> I'm relatively new to the world of tcpip, but I get the impression the
> significance of X-1J being able to do IP routing is lost on most of the
> netrom NodeOps. Even locally, some of the IP crowd have advocated going
> back to "netrom"! There is a lack of understanding of how the two
> protocols interact with each other and indeed, a lack of understanding
> of how each protocl works.

I think you are correct, Jack. I have a fair knowledge of how netrom
protocol works, but virtually none about tcp/ip. It's mostly because of
lack of exposure and participation. I learn by doing. I don't "do"
tcp/ip (yet).

> Thus as I see it, what is needed is a FAQ briefly outlining the basic
> protocols, the significance of the effects of higher overhead supporting
> 'advanced' protocls, and the effects of congestion vs. overhead.

Absolutely!

> Based
> on this review, the FAQ could then show why it is to everyones benefit
> to enable IP routing along the node system. It would also be nice if
> the FAQ gave a number of examples on how to set up X-1J IP routing. I
> know I spent more time than I'd care to admit in setting up my particular
> system so it "works". In looking at other systems I see obvious
> problems which indicate a lack of understanding by the various NodeOps
> on how the IP tables should be configured. Maybe someone more familar
> than I would like to take this project on?

This is the same thing we all saw with netrom. AND!...in some areas,
they still haven't learned. As you know from our previous many
conversations, Jack, some areas are really in the dark ages with barely
working netrom paths on 145.01 exclusively and running 1200 baud. That
is still the case here.

I have neighbors running X1J that I can't access directly. I have to go
through one "regular" netrom node to get to the next X1J node. I run 3

X1J nodes here and have no tcp/ip activity. People here don't even know
what it is, much less why they would want to run it. This holds true for
several hundred miles in all but one direction.

I could certainly use some help in understanding the "other" protocol.
Don't tell me to read a book. That's like taking a sleeping pill. I
have to learn by doing.

Cheers :)

Gary - AG0N

161. Re: TCP/IP Settup

From: ssampson@sabea-oc.af.mil (Steve Sampson)
Date: Sun, 24 Jul 1994 17:51:24 -0500 (CDT)
To: netsig@tcet.unt.edu
Cc: ssampson@sabea-oc.af.mil (Steve Sampson;DOD)
Message-ID: <9407242251.AA14763@sabea-oc.af.mil>
Rendered body type: text/plain

Being an advocate of speed my first choice is to go with Datagram mode and
2 nodes per frequency (more than two don't work at AX.25 half-duplex Datagram
mode). Failing that, to use connected mode (Virtual Circuit). The way I set
up the X-1 is to put only the routes that go to Gateway Servers (Servers to
other Frequency, or Net). At this point it is up to the Servers to operate
over X-1 efficiently. At 1200 you will use 256 byte packets. At 9600 probably
no less than 512. So using NOS you will want to set it up to fragment AX.25
to save 40 bytes per transmission. If you use the following on 9600:

```
Paclen:         512
MTU             512
MSS             472  (MTU - 40)
WIN             1888 (MSS * 4)
```

You will have to send 40 bytes of IP header every packet. If you set your
NOS up to fragment AX.25 (now called segmenting - see also LAPA.TXT on
tcet.unt.edu) it will break up your huge packet into parts without the 40
bytes each time. Now I'm doing this from memory so disclaimers apply, but
if you set your MTU for 2048 and MSS for 2008 and experiment with WIN of
2008 to 8032, you will be miles ahead.

Now when you go to connected mode (VC) you will also have to set the Maxframe
to the same as the WIN multiplier (2,4,etc) but here you will also have to set
the timers to be more agressive than the TCP. It is better to be agressive
than a lazy pig. When you set your timers up for 3000 miles, it makes the
1 mile perform like crap. Who cares if you have to send 6 packets before the
other end ACKs, if you have to screw up your local links!

The best bet is to create full quieting RF paths and Datagram mode, but VC mode
will help noisy links. I'm using the DDN to transmit this message and we use
VC mode X.25 to connect to the Internet which uses Datagram. So the result is
the same, with X.25 being slower, but who cares when you're talking 500ms. . .

--
Steve

162. Setting up IP variables

From: ssampson@sabea-oc.af.mil (Steve Sampson)
Date: Sun, 24 Jul 1994 18:45:46 -0500 (CDT)
To: netsig@tcet.unt.edu
Message-ID: <9407242345.AA15281@sabea-oc.af.mil>
Rendered body type: text/plain

I run TCP/IP over Ethernet at home between two computers, thus I need to run an
MTU of 1500 which is what Ethernet uses. So if I also run TCP/IP over AX.25
I need to set that MTU up for 1500 also, or the IP will fragment itself into
a smaller MTU size, and this is to be avoided at all cost. Fragmenting AX.25
on the other hand is desireable and efficient (called segmenting now). Most
people like packets that are a power of 2, but it doesn't really matter. So I
would, in this case, set my NOS up to fix both the AX.25 and Ethernet at 1500
bytes. At 1200 baud it is difficult to achieve more than 256 bytes, with less
even more likely, and 9600 seems to work well with 512. Neither of these
divides evenly into 1500, so some other number is needed. For 9600 then I
would use a Paclen of 500, and for 1200 a Paclen of 250. This will allow you
to segment evenly after setting up the TCP MSS and TCP WIN:

```
1200                                9600
--------------------------------    --------------------------------
```

```
Paclen          250  (MTU / 6)          Paclen          500  (MTU / 3)
MTU             1500                    MTU             1500
MSS             1460 (MTU - 40)         MSS             1460 (MTU - 40)
WIN             2190 (MSS * 2)          WIN             4380 (MSS * 4)

With the TCP WIN being a little smaller for 1200 as it usually performs rather
slowly and would eat up a lot of memory.  If you are memory starved, then you
must run smaller Windows.  In the 1200 example it will save 40 bytes of IP
header each packet.  Only the first packet will have the IP header, the other
5 will only have data.  If the link is running well your computers will send
3000 bytes of IP data, plus AX.25 headers before the other end will ACK at the
TCP layer.  If any problems occur it will start over with one MTU per ACK, then
go to two per ACK.  At 9600 the effect is greater.  In this case 6000 bytes per
ACK are transmitted (4 * 1500).  Watching this over the air is something to
behold and enables Mega-byte file transfers to occur at 9600 in 30 min rather
than 30 days using Net/Rom or Rose.  There is no way to do this over distance
without serious settup by all concerned.  In most cases you will only have
pockets within cities working this well.  It is a goal however to replace all
Rose and Net/Rom versions with IP.  Once the infrastucture is in place, the
X-1 owners can type 'no -' and shut off the Net/Rom part :-)  Or better yet,
the X-1 programmer can distrubute an IP only version, and have greater memory
available for several circuits of large packet sizes.
--
Steve
```

163. Re: nos and netrom

```
From: Tim Baggett <wbaggett@NMSU.edu>
Date: Sun, 24 Jul 1994 18:14:05 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.87.9407241706.A26595-0100000@gauss>
Rendered body type: text/plain
```

```
Karl,

I understand that the problem is that JNOS is not in the 'verbose' mode,
that is, only broadcasting it's own netrom alias. Check to make sure that
in the netrom interface command line the 'n' parameter does not exist.

>From the JNOS manual page 53:
netrom interface [<iface> <quality> [n]]
Activate <iface> a a netrom interface. <quality> can be between 1 and
255. Interfaces are activated using verbose routes broadcasting by
default, meaning that they broadcast all known routes. This can be
changed by adding the optional 'n' parameter to the command. Then only
the system itself will be announced in a broadcast, not the known routes.


Hope this helps.

73
Tim


-------------------------------------------------------------------------------
Tim Baggett, AA5DF              | Countdown to Graduation: %%% days & counting
Las Cruces, New Mexico          |     "Ya want fries wid dat hamburger?"
                                |
New Mexico State University     |    "If you can't run with the big dogs,
Electrical Engineering Student |           then stay on the porch"
-------------------------------------------------------------------------------
```

164. Disaster Network Nodes

```
From: ssampson@sabea-oc.af.mil (Steve Sampson)
Date: Sun, 24 Jul 1994 19:36:37 -0500 (CDT)
To: netsig@tcet.unt.edu
Message-ID: <9407250036.AA15694@sabea-oc.af.mil>
Rendered body type: text/plain
```

```
Why should Hams switch to IP?

One of the stated purposes of the Amateur Radio Service (ARS) by the FCC is to
provide communications in the event of disaster.  Rather than connecting the
whole country with radio links which duplicate wire-line links, a system of
inter-connecting the two is desireable.

For example, the Bonneville Dam was hit by a large Airliner which was taking-
off from Portland.  The structure was completely gutted by fire and the back-
log of water released through a 500 foot break in the spillway.  Power to
Portland and cities within a 100 mile Arc are without power.  There is an IP
```

node on the Internet at the University in Eugene Oregon. You must transmit
the list of those killed and the survivors at the scene in 2 hours.
The document is 4 Megabyte in length.

What solution would you use to solve the communications problem?

One may set up a Net/Rom link to Eugene but Net/Rom doesn't work over the
Internet. One may use a Rose link, or a Zimbabwe-Link, or God knows what-all,
but will it connect to the Internet through a Thinnet or RJ-45 jack?

This is a Final Exam - short answers will cost you a letter-grade.

Hint: The only answer which achieves speed is to interface to the Internet
with a like network. If the RJ-45 or Thinnet jack is expecting an MTU of 1500,
then you better damn well use it. It'll cost you a letter-grade if you don't.
A link of Nodes would be set up to operate on Wind and Solar to the Portland EOC
for linkup to the outside world.

So this is basically the solution. The ARS must provide plug-n-go operation for
connection to another network which has worldwide accessability. Sort of like
Repeaters and Telephones (Merging two like networks).

The only other option is a dial-up modem in Eugene which connects to another in
Seattle (via Alaska Troposcatter?) with each running Rose and 256 byte packets
and users interfacing with a BBS. This solution will cost you a letter grade
also, as it is much less efficient and something a 9 year-old would design.

Good luck on your test,

Dr. I. M. Tuff
--
Steve

165. Re: nos and netrom

From: makinc@hhcs.gov.au (Carl Makin)
Date: Mon, 25 Jul 1994 11:03:34 +1000
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <199407250103.LAA18532@sserve.cc.adfa.oz.au>
Rendered body type: text/plain

At 4:50 PM 24/7/94 -0500, <net_sig@tcet.unt.edu> wrote:

>   But if I connect to one of the x1j nodes and call the other it
> doesn't work. For some reason the nos netrom doesn't work like a regular
> netrom node.

It sounds like the NOS netrom node isn't broadcasting it's tables. There
is a parameter to enable it. (It depends on what version of nos you are
running as to what the command is. :-( )

Try

netrom verbose on   (pre JNOS 1.08)
netrom verbose <port> on   (after, I think).

Carl.

--
Carl Makin (VK1KCM)   "Speaking for myself only!"
makinc@hhcs.gov.au   'Work +61 6 289 8443'   Canberra, Australia
'The best book on programming for the layman is "Alice in Wonderland";
 but that's because it's the best book on anything for the layman.'

166. Re: Getting back on track.

From: wb9mjn@uugate.wa7slg.ampr.org
Date: Sun, 24 Jul 94 21:46:47 mdt
To: netsig@tcet.unt.edu
Message-ID: <95540@uugate.wa7slg.ampr.org>
Rendered body type: text/plain

Hi Hank and others. I really don t think the question is wether NETROM or
ROSE or whatever is better than TCPIP. Because, there are many different
things to measure about protocolls. NETROM has a better router (when operated
and not left at its default operation) than some other protocolls,in the
xxxx) in the Ham Radio eviorment, in my opinion. But that s neither here
nor there.

 The real question is if there is enuf versatility in these protocolls to

do the things we want now, and in the future. Here is where TCPIP has the advantage. It has an application designator right in the code. So, a packet is addressed right to an application, besides a node. And there are future application addresses available for expansion.

TCPIP also has a hierarchical addressing. So does ROSE. But the TCPIP address structure allows the hierarchical addresses to be routed in blocks, much easier. This permits, in a practical network, routing from the user level all the way across global networks, right back down to the user level.

These things allow the applications to reside at the user machine, and not at a server. This allows us to off load much stuff to the peer to peer, that is user to user operation of the network. Thus, a network with allot of thruput , can actually be used to capacity by all the users computers, and not be throttled at server to server thruput level. This kinda improvement is most evident in the E-Mail application. Where IP to IP traffic can flow between two users stations, without having to wait for the daily bulletins to be passed by several Bulletin servers, along the path between the two machines. Sure, some BBS computers search and send user to user traffic first, but many do not. And even these have other user to user traffic, that the IP peer to peer communication does not have to deal with.

Now, everybody lets not confuse what i m saying here with putting everybody on a backbone. These IP users have to be on LAN, seperate from the backbone, just like all the other packet users. Or there will be lousy thruput.

Back to the TCPIP thing. Yes, TCPIP being so versatile, having better addressing format, and addresses for applications, has more overhead. But, does it really? When a BBS has to communicate to a distant NETROM, C BBSABC, and after connected, send BBS for the message server. These are things that the application addressing in TCPIP take care of, without multiple hand shaked communication at the application level. Sure there s handshaking when the actual messages are passed, but to get to the mail client program at the distant node, its just does it in the packets. So, in allot of our applica-tion, the TCPIP overhead is a trade off when we compare it to the way we do things now.

73, Don. WB9MJN.

----- End of forwarded message -----

167. Re: Setting up IP variables

From: bruce@pixar.com (Bruce Perens)
Date: Sun, 24 Jul 94 20:48 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <m0qSH1g-0006bPC@mongo.pixar.com>
Rendered body type: text/plain

>From: ssampson@sabea-oc.af.mil (Steve Sampson)

> I run TCP/IP over Ethernet at home between two computers,
> thus I need to run an MTU of 1500 which is what Ethernet uses.

You didn't say what software you are using. Is this a limitation of NOS? Linux has per-interface configuration of the MTU, though not the TCP window. I can't believe nobody has built a version of NOS with this fixed.

Bruce AB6YM

168. RE: nos and netrom

From: wb9mjn@uugate.wa7slg.ampr.org
Date: Sun, 24 Jul 94 22:13:22 mdt
To: netsig@tcet.unt.edu
Message-ID: <95551@uugate.wa7slg.ampr.org>
Rendered body type: text/plain

Hi, from what u say, it sounds like u want to enable the nos Verbose.

I beleive the command syntax is ne verbose on .

The NETROM in NOS is configured to minimise its disruption of the NETROM routing, when used at the typical home location. That is, it doesn t pass NETROM routes further on. It just sends its own NETROM info in its NETROM routing broadcast, and not that of the other nodes it hears. This is generally a very wise thing. But, if ur using the NOS at an appropriate site, and want it to relay NETROM traffic, u have to set it up different-

ly.

 In the Chicago area here, the NOS home station usually doesn t run NETROM
at all, since within the area we have IP connectivity. Only the main router
sites, use the NETROM and IPoverNETROM stuff to get packets to St Louis,
and sometimes Wisconsin, and we hope soon to NW Indiana.

73, Don.

169. Re: Getting back on track.

From: ron@chaos.eng.wayne.edu (Ron Atkinson N8FOW)
Date: Mon, 25 Jul 94 02:11:47 EDT
To: netsig@tcet.unt.edu
Message-ID: <9407250611.AA20754@chaos.NIS.chaos>
Rendered body type: text/plain

> Back to the TCPIP thing. Yes, TCPIP being so versatile, having better
>addressing format, and addresses for applications, has more overhead. But,
>does it really? When a BBS has to communicate to a distant NETROM, C BBSABC,

Yup, agreed. Also remember though that TCP/IP only has more overhead on
small packets. When you start running higher speeds with larger packets
the overhead essentially remains the same size but the amount of data becomes
much larger.

For example, if TCP/IP has 40 bytes of overhead per 256 byte mtu, and
NETROM has 20 (I think it's 20, if not then lets use 20 for an example since
actually size isn't the issue here) per 256 mtu. IF the mtu is increased
to 512 then there is 40 bytes of overhead when the same NETROM packet is
going to require two 256 byte packets with a total of 40 bytes overhead.
Plus it'll be 2 packets instead of one. Go a bit higher on the mtu, say
1024 (works fine on 9600 for backbone links too) there is still 40 bytes
of overhead per packet when NETROM would now have 80 bytes to do the same
transmission.   For those that say this doesn't add up, remember that
NETROM systems are only using 256 byte packets no matter how many you push
through, with TCP/IP we can run larger packets.

If there's a mistake in my message here let me know. I dropped NETROM
back in 92 and only run TCP/IP now.

Another problem with NETROM actually isn't the protocol itself. NETROM
actually can work real well for close to real-time transmissions in a
small scale (like a single state or portion of a state) only if the nodes
are managed properly. This mismanagement is what killed it in our area and
why it has NETROM is such a bad word around here. Too many BBS's just
HAD TO RUN IT and routes ended up going through them when they weren't
setup to be switches. Then the switches would do things like lock down
routes to known good neighbors.... but... they'd add in their 'friends'
NETROM node to it regardless of how badly it was run. That single node
would kill the network. With the current TCP/IP situation here that
probably doesn't exist anymore, but with a routing protocol such as RSPF
the NETROM problem can be duplicated over again since all it takes is
an IP switch to show up saying "I can reach the world" and all routes
automatically end up going through that person whether the routes are
reachable or not.

Put up anything you want for a network,   NETROM, ROSE, TCP/IP, etc...
just design it right and set it up right and manage it right and it'll
probably work pretty good. They all have advantages and disadvantages.
Figure out what you or everyone else wants and determine what you're
capable of putting up and just do it. I went with TCP/IP because it's
what I want to do and I was dissatisfied with other protocols, but that
was my personal choice, not others.

Ron N8FOW

170. Re: Disaster Network Nodes

From: Tim Baggett <wbaggett@NMSU.edu>
Date: Mon, 25 Jul 1994 00:18:37 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Cc: Gateways mail list <gateways@mpg.phys.hawaii.edu>
Message-ID: <Pine.3.87.9407242255.G27319-0100000@gauss>
Rendered body type: text/plain

I assume you want the solution to incorporate present day amateur radio
technology.

In my solution to the problem, The United States (heck the world) would
have numerous AMPRnet/Internet gateways. Each gateway would serve a small

Local area packet radio Network LAN that is 19.2K or 9.6K. The LAN would be constructed around a primary IP router node such as THENET X1J (which has been praised on here recently) or JNOS40 (if anyone ever figures out how to make it work). The LAN is coordinated in such a way that IP routing is simple. IP routing is not as hard as many of the hams think it is:

set one IP route using datagram to the IP router node.
set one default route to the IP router as a 'gateway'

That is all the users need. They can set individual routes to other stations they can hear direct if they wish. The above two routes cause the router node to do as the name implies - become the router. The node sysops who are much more versed in TCP/IP operations can then manage the network by setting the routes on the router. Basically these are:

set one route each to users heard directly
set subnet routes to other routers via RF
set a default (for non local routes) to the Internet gateway

By using this approach, the users do not have to worry about 'complicated routes'. When a new IP user pops up on the air, everyone already has a default route set to the new user via the router. The router in turn has a default route set direct over the air. At the most, the node router sysop(s) will have to add in a route.

But back to the gateway: The above mentioned routes default every non-local route to the Internet gateway. The gateway sysops already manage routes for only their own gateway. Through a mail list and coordination (thanks to Tony, Warren, & Brian) each gateway sysop maintains their routes on a primary database. This database is then made availible or mail daily to each other gateway sysop. In my case I have a UNIX CRONTAB process set up to update the IP routes to other gateways on NMSUGW every 24 hours. It is all hands free. I only have to make changes when the local IP routes that my gateway handles changes. User packets destined for some other user in another part of the world first goes to a router, then to the gateway, then via the Internet to another gateway, back over RF to a router and finally to the end user.

Suppose a new gateway is set up to serve a new LAN somewhere. Your local gateway will have a new route set to the new gateway. Because of the routing mentioned above, the users are already connected to the LAN served by the new gateway!

The point is that these routes are easy to maintain for the user and each node sysop maintains only a small part of their routing. IP is designed to be routed in groups. This may all be academic to packet radio, but I believe this would be an excellent starting point. (IMHO Netrom is too clumsy for what I described. Imagine a nodes list routing to 100 LANs served by gateways! yikes!)

The current thread concerning X1J addresses the node router. I think THENET and JNOS40 (when it begins to work) is well suited for mountain top node use since it routes IP as IP and NETROM as NETROM. I realize that some users do not run TCP/IP and only use NETROM. These nodes handle both protocols in their native protocol, yet the nodes can encapsulate IP over NETROM if it is required. I think more work needs to be done to support this feature so we can use other TNC's such as the upcomming Kantronics 9612 etc.

Regarding the use of Internet gateway's for emergency communication: This was brought up on the gateways mail list right after field day when I emailed the list from 10,000 feet using battery power and the NMSUGW gateway. There were a few responses stating the Internet would be the first line of communication to go down in the event of a disaster. "What happens if the power goes out?" etc. One person who runs a main Internet backbone T3 node mentioned everything there has backup power.

Let me comment for a minute on New Mexico State University's Internet connection and how they are set up for a 'disaster'. There are two T1 (1.544 mbps) links going to the University. The primary one runs up the Rio Grande valley to the Denver T3 backbone. In the event of a 'backhoe fade' on this fiber optic cable, the second T1 link to University of Arizona and to University of Utah (where it connects to another T3 node) is used. There are also some slower backups. In fact only a week ago the Cisco router freaked out and decided there was no T1 link to Denver. But it went right on routing to Arizona and Utah on the backup line!

As for the power situation, well, this was actually 'tested' right after field day! I should have posted this to the gateways mail list but I

didn't. One afternoon a main transformer blew cutting power to over half
the campus - the computer center included! The backup UPS systems kept
the systems alive until the diesel generators roared to life. The campus
network _was_ alive and we could 'ping' individual systems, until their
UPS died. We remained conected to the Internet the entire time. The
diesel's ran hot and heavy for over 12 hours supplying emergency lighting
and the computer center.

I have also received email mentioning that the Internet remained intact
during the San Francisco and recent LA earthquakes.

I beleive the Internet gateways could be a VERY valuable resource in the
event of an emergency. I honestly do not want to find out for sure, but
if there is an emergency in Las Cruces, NM, I will have a generator
sitting on the top of the EE building with a power cable running through
the roof powering NMSUGW.

73
Tim

Tim Baggett, AA5DF | Countdown to Graduation: 145 days & counting
Las Cruces, New Mexico | "Ya want fries wid dat hamburger?"
                               |
New Mexico State University | "If you can't run with the big dogs,
Electrical Engineering Student | then stay on the porch"
---

171. Modern Windows TCP/IP and AX.25

From: KY1TLuck@aol.com

Date: Mon, 25 Jul 94 09:10:31 EDT
To: netsig@tcet.unt.edu
Message-ID: <9407250910.tn129747@aol.com>
Rendered body type: text/plain

One time not long ago, Steve said:

>If you are interested in an effective way to run TCP/IP and AX.25 on
>Windows, get the file:
>ftp.ucsd.edu:/hamradio/packet/tcpip/incoming/ethrax25.zip
>Ive used this with SuperTCP (Frontier Technologies) and I can do my
>college homework, play games, etc, and receive and send mail via SMTP, as
>well as FTP, etc. I found that SuperTCP has the capability to adjust it's
>timers to seconds and minutes while NCSA Telnet/FTP did not. Now, If we
just
>had an AX.25 network in Oklahoma that wasn't based on 1200 baud I'd leave it
>on. The only IP networks are on the user frequency of 145.01 so no amount of
>software will help this town. . .

To which KY1T retorts:

Now THIS is getting interesting... Steve, if there were some reasonably
located 9600 or better TCP/IP capabilities in your area, and if you DID leave
the above-mentioned setup, well set UP, what would you envision it allowing
users to do?

My goal is to somehow allow Windows-based software, perhaps even some unique
servers that I code, to be available from MY setup, via the local TCP/IP
switches.

Better yet, I'd LOVE to be able to use the new Internet in a Box stuff to
allow my users to do various things. Eventually, things like mail to and
from the Internet (I'll provide the direct link to the Internet), as well as
WWW, Archie, Mosaic, and -- well -- whatever comes along.

But first things being necessarily first, I think you may be saying that the
ethrax and perhaps frontier technologies stuff may allow some of the timing
problems to go away and perhaps allow all this wonderfullness to occur. Zat
so?

Luck Hurder, KY1T   KY1TLUCK@AOL.COM ARRL@BIX.COM
53 Broadview St.   "The Amateur Radio Service opens doors
Newington CT 06111   to the world for EVERYONE!"
---

172. Re: nos and netrom

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Mon, 25 Jul 1994 07:17:19 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9407250716.A1965-0100000@kazak>
Rendered body type: text/plain

On Sun, 24 Jul 1994, TAPR Network Special Interest Group wrote:

> From: Tim Baggett <wbaggett@NMSU.edu>
> Subject: Re: nos and netrom
> To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
> Date: Sun, 24 Jul 1994 18:14:05 -0600 (MDT)
>
> Karl,
>
> I understand that the problem is that JNOS is not in the 'verbose' mode,
> that is, only broadcasting it's own netrom alias. Check to make sure that
> in the netrom interface command line the 'n' parameter does not exist.

Yes the manual page 53 is VERY unclear about what n is expected
to be. So yesterday we removed the 1 I had there and it didn't seem to
work. So on page 55 I read about netrom promiscuous and turned it ON as
well but still no joy.

> >From the JNOS manual page 53:
> netrom interface [<iface> <quality> [n]]
> Activate <iface> a a netrom interface. <quality> can be between 1 and
> 255. Interfaces are activated using verbose routes broadcasting by
> default, meaning that they broadcast all known routes. This can be
> changed by adding the optional 'n' parameter to the command. Then only
> the system itself will be announced in a broadcast, not the known routes.
>
>
> Hope this helps.
>
> 73
> Tim

Not really Tim. I do have the book and did read it. We tried a
lot of things. But since you have netrom running on nmsugw it must work.

-karl

173. Re: Abandoning The Network Goals

From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
Date: Mon, 25 Jul 94 10:46:49 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <9407251046.ZM5208@hanko>
Rendered body type: text/plain

On Jul 23, 5:14pm, TAPR Network Special Interest Group wrote:
> Subject: Re: Abandoning The Network Goals
> From: djk@dirku.demon.co.uk (Dirk-Jan Koopman)
> Subject: Re: Abandoning The Network Goals
> To: netsig@tcet.unt.edu
> Date: Sat, 23 Jul 1994 07:22:28 +0200 (BST)
>
> n>
> > From: ka7oei@uugate.wa7slg.ampr.org
> > Subject: Re: Abandoning The Network Goals
> > To: netsig@tcet.unt.edu
> > Date: Wed, 20 Jul 94 12:47:27 mdt
> >
> [stuff deleted]
> >
> > - 1200 baud sucks rocks. Simply put, its speed makes it unuseable for
> > practical multi-user real-time system that comes anywhere near its
> > saturation point. (Somone help me. On a CSMA system, assuming NO hidden
> > terminals, what is the "saturation" point as a percentage? (I.E.
> > the point at which throughput starts going down...)) There is simply
> > not enough bandwidth to support reasonably intelligent high-level
protocols.
> > >From a realistic standpoint, it *MUST* be supported because that is what
most
> > people have and it is therefore important to support it to a reasonable
> > degree, bearing in mind its limitations.
>
> about 18%

My own measurements, at 9600 baud over a 55 mile path on 70 cm show

closer to 80%. What are we measuring here?

   ... Hank

--

Hank Oredson @ Mentor Graphics   Library Operations
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174. Re: RE : Getting back on course

From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
Date: Mon, 25 Jul 94 10:49:25 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <9407251049.ZM5213@hanko>
Rendered body type: text/plain

On Jul 23, 6:19pm, TAPR Network Special Interest Group wrote:
> Subject: Re: RE : Getting back on course
> From: Klarsen <klarsen@acca.nmsu.edu>
> Subject: Re: RE : Getting back on course
> To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
> Date: Sat, 23 Jul 1994 06:38:05 -0600 (MDT)
>
>
>
> On Fri, 22 Jul 1994, TAPR Network Special Interest Group wrote:
>
> > From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
> > Subject: Re: RE : Getting back on course
> > To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
> > Date: Fri, 22 Jul 94 11:34:47 PDT
> > Just a point of curiosity: does X1J also encapsualte NET/ROM node
> > broadcasts through the tcp/ip portions of the network? i.e. is it
> > "protocol transparent" in both directions?
> >
> >   ... Hank
>
>   Yes it does Hank. x1j is in fact the TheNet code version 1.5 with
> the tcp/ip router code overlayed. It is on a 512k e-prom and the Z80
> address 32k limit is fixed with bank switching (a part of the tnc-2 does
> the bank switching).
>
>   The node as far as I can tell handles netrom just like TheNet
> does and does the tcp stuff just like nos does. But I have not seen the
> code but bet you could ask and get it.

I have it ...

The question was directed toward the tcp/ip folks.

We have ip encasulated in NET/ROM, I was curious what happens when
the network encounters an IP router: to make the network complete,
the IP router would need to encapsualte NET/ROM virtual circuits,
and also carry NET/ROM broadcasts to other ip/NETROM gateways.

   ... Hank

--

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175. Re: nos and netrom

From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
Date: Mon, 25 Jul 94 10:53:24 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <9407251053.ZM5225@hanko>
Rendered body type: text/plain

On Jul 24, 4:47pm, TAPR Network Special Interest Group wrote:
> Subject: nos and netrom
> From: Klarsen <klarsen@acca.nmsu.edu>
> Subject: nos and netrom
> To: Sig Networking <netsig@tcet.unt.edu>
> Date: Sun, 24 Jul 1994 03:21:24 -0600 (MDT)
>

>
>   We have a problem here. I helped ka5oyo get set up as a tcp/ip
> system and that part is working real well now. We can smtp and ftp and
> ping and all that good stuff. He can connect to things using his netrom
> system and all that.
>
>   But we want to use this jnos version 1.10d station as a netrom
> link between 2 nodes. For some reason it does not work as a regular
> netrom node! The jnos alias is eagles and it is between 2 x1j nodes that
> are on the same frequency. Eagles has both nodes in it's node list. The
> x1j nodes have eagles in there node list.
>
>   But if I connect to one of the x1j nodes and call the other it
> doesn't work. For some reason the nos netrom doesn't work like a regular
> netrom node.

Just run BPQ in the machine running JNOS, and have JNOS talk to the
local BPQ. Then BPQ will take care of the "NETROM stuff", and JNOS
can take care of the "ip stuff". Works great.

   ... Hank

--

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176. Re: Setting up IP variables

From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
Date: Mon, 25 Jul 94 11:06:56 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <9407251106.ZM5231@hanko>
Rendered body type: text/plain

On Jul 24, 9:59pm, TAPR Network Special Interest Group wrote:
> Subject: Setting up IP variables
> From: ssampson@sabea-oc.af.mil (Steve Sampson)
> Subject: Setting up IP variables
> To: netsig@tcet.unt.edu
> Date: Sun, 24 Jul 1994 18:45:46 -0500 (CDT)
>
> ...

> Watching this over the air is something to
> behold and enables Mega-byte file transfers to occur at 9600 in 30 min rather
> than 30 days using Net/Rom or Rose.

Gee ... our experience with NET/ROM protocol at 9600 baud sounds EXACTLY
like your experience with ip at 9600. We regularly transfer MB files
over 9600 baud NET/ROM (actually g8bpq ...) links, and it doesn't take
"30 days" ... how about some actual measured comparisons?

(No, I can do it - no ip systems on our 9600 baud network)

--

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177. Re: Disaster Network Nodes

From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
Date: Mon, 25 Jul 94 11:15:21 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <9407251115.ZM5237@hanko>
Rendered body type: text/plain

On Jul 24, 10:45pm, TAPR Network Special Interest Group wrote:
> Subject: Disaster Network Nodes
> From: ssampson@sabea-oc.af.mil (Steve Sampson)
> Subject: Disaster Network Nodes
> To: netsig@tcet.unt.edu
> Date: Sun, 24 Jul 1994 19:36:37 -0500 (CDT)
>
>
> Why should Hams switch to IP?

>
> One of the stated purposes of the Amateur Radio Service (ARS) by the FCC is
to
> provide communications in the event of disaster. Rather than connecting the
> whole country with radio links which duplicate wire-line links, a system of
> inter-connecting the two is desireable.
>
> For example, the Bonneville Dam was hit by a large Airliner which was taking-
> off from Portland. The structure was completely gutted by fire and the back-
> log of water released through a 500 foot break in the spillway. Power to
> Portland and cities within a 100 mile Arc are without power. There is an IP
> node on the Internet at the University in Eugene Oregon. You must transmit
> the list of those killed and the survivors at the scene in 2 hours.
> The document is 4 Megabyte in length.
>
> What solution would you use to solve the communications problem?

I would use a vehicle to carry the paper, mag tape, or diskettes
to Eugene. Total delay time of two hours. Total potential data transfered
in excess of 500 TB. Total data rate higher than any existing network.

Use appropriate solutions to the problem at hand.

>
> One may set up a Net/Rom link to Eugene but Net/Rom doesn't work over the
> Internet. One may use a Rose link, or a Zimbabwe-Link, or God knows
what-all,
> but will it connect to the Internet through a Thinnet or RJ-45 jack?
>
> This is a Final Exam - short answers will cost you a letter-grade.
>
> Hint: The only answer which achieves speed is to interface to the Internet
> with a like network. If the RJ-45 or Thinnet jack is expecting an MTU of
1500,
> then you better damn well use it. It'll cost you a letter-grade if you
don't.
> A link of Nodes would be set up to operate on Wind and Solar to the Portland
EOC
> for linkup to the outside world.

Forgot that things like gateways exist, did you?
Oh well ...

The point I am making is that we would get the information across using
ANY available protocol. It's just text. Might choose to use CLOVER
and move it on 80M - if the vhf/uhf links are broken.

If you are asking what the PLAN is ... there IS NO PLAN.

SO what will actually happen in your scenario? Ham radio will do NOTHING.

The point here is that it does not matter what resources might be available
for use in emergency, without a plan they probably will not be available.

Here in the Portland area, there is NO plan.

>
> So this is basically the solution. The ARS must provide plug-n-go operation
for
> connection to another network which has worldwide accessability. Sort of like
> Repeaters and Telephones (Merging two like networks).

We have. They are called gateways.

--

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Amateur Radio: W0RLI@W0RLI.OR.USA.NOAM

178. Re: Getting back on track.

From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
Date: Mon, 25 Jul 94 11:22:25 PDT

To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <9407251122.ZM5242@hanko>
Rendered body type: text/plain

On Jul 25, 12:34am, TAPR Network Special Interest Group wrote:
> Subject: Re: Getting back on track.
> From: wb9mjn@uugate.wa7slg.ampr.org
> Subject: Re: Getting back on track.
> To: netsig@tcet.unt.edu
> Date: Sun, 24 Jul 94 21:46:47 mdt
>
> Hi Hank and others. I really don t think the question is wether NETROM or
> ROSE or whatever is better than TCPIP. Because, there are many different
> things to measure about protocolls. NETROM has a better router (when operated
> and not left at its default operation) than some other protocolls,in the
> xxxx) in the Ham Radio eviorment, in my opinion. But that s neither here
> nor there.

It is very important. The "cost" of a network also involves the cost to
setup and maintain the network. Hams have chosen NET/ROM in large part
because of the percieved low cost of operation. Whether that cost actually
is lower can only be determined by experimentation and publication of the
results.

> The real question is if there is enuf versatility in these protocolls to
> do the things we want now, and in the future. Here is where TCPIP has the
> advantage. It has an application designator right in the code. So, a packet
> is addressed right to an application, besides a node. And there are future
> application addresses available for expansion.

So does NET/ROM.

> TCPIP also has a hierarchical addressing. So does ROSE. But the TCPIP
> address structure allows the hierarchical addresses to be routed in blocks,
> much easier. This permits, in a practical network, routing from the user
> level all the way across global networks, right back down to the user level.

NET/ROM's main disadvantage.

>   These things allow the applications to reside at the user machine, and
> not at a server. This allows us to off load much stuff to the peer to peer,
> that is user to user operation of the network. Thus, a network with allot
> of thruput , can actually be used to capacity by all the users computers,
> and not be throttled at server to server thruput level. This kinda
improvement
> is most evident in the E-Mail application. Where IP to IP traffic can
> flow between two users stations, without having to wait for the daily
> bulletins to be passed by several Bulletin servers, along the path between
> the two machines. Sure, some BBS computers search and send user to user
> traffic first, but many do not. And even these have other user to user
> traffic, that the IP peer to peer communication does not have to deal with.

Or to restate this: each machine IS a server.
However the same argument can be made (and has been answered in practice)
for NET/ROM ... there is nothing magic about the transport protocol that
allows or disallows variations on client / server archictecture. We have
plenty of examples already on air, running over ip (over NET/ROM_) or
running directly over NET/ROM.

> Now, everybody lets not confuse what i m saying here with putting everybody
> on a backbone. These IP users have to be on LAN, seperate from the backbone,
> just like all the other packet users. Or there will be lousy thruput.
>
> Back to the TCPIP thing. Yes, TCPIP being so versatile, having better
> addressing format, and addresses for applications, has more overhead. But,
> does it really? When a BBS has to communicate to a distant NETROM, C BBSABC,
> and after connected, send BBS for the message server. These are things that
> the application addressing in TCPIP take care of, without multiple hand
> shaked communication at the application level. Sure there s handshaking when
> the actual messages are passed, but to get to the mail client program at the
> distant node, its just does it in the packets. So, in allot of our applica-
> tion, the TCPIP overhead is a trade off when we compare it to the way we
> do things now.

Yup. NET/ROM has only laters 3 and 4.

Who will design the session and application layers for NET/ROM?

   ... Hank

```
--

Hank Oredson @ Mentor Graphics             Library Operations
Internet     : hank_oredson@mentorg.com    "Parts 'R Us!"
Amateur Radio: W0RLI@W0RLI.OR.USA.NOAM
```

179. Re: Getting back on track.

```
From: bm@hydra.carleton.CA (Barry McLarnon VE3JF)
Date: Tue, 26 Jul 94 7:47:15 WET DST
To: netsig@tcet.unt.edu
Message-ID: <9407261147.AA00442@hydra.carleton.CA>
Rendered body type: text/plain
```

```
Hank sez:
> Yup.  NET/ROM has only laters 3 and 4.
>
> Who will design the session and application layers for NET/ROM?

Some masochist with a penchant for wasting time, no doubt. :-)

NET/ROM is broken at layer 3, due to its limited-horizon routing protocol
and general lack of scalability.  It is suitable only for small regional
networks.  If that's all you want, fine... but many of us want peer-to-peer
networking over wide areas (and many more *will* want it after they experience
a network that works).

Why build something on a house of cards?  Many people are clinging doggedly
to NET/ROM because they are comfortable with it, but it is fundamentally a
dead end.  It's time to move on...

Barry

--
  Barry McLarnon  VE3JF/VA3TCP   |  Internet: bm@hydra.carleton.ca
  Ottawa Amateur Radio Club      |  AMPRnet:  barry@va3tcp.ampr.org
  Packet Working Group           |  FreeNet:  aa187@freenet.carleton.ca
```

180. ??Problem with X1J not broadcasting node

```
From: Daniel Audet <daudet@LLC.org>
Date: Tue, 26 Jul 1994 00:22:57 -0400 (EDT)
To: netsig@tcet.unt.edu
Message-ID: <Pine.3.85.9407260057.A15015-0100000@biko.llc.org>
Rendered body type: text/plain
```

```
I every one
just install a node X1J and it seem that the node is not broadcasting at all.
There is 2 nodes only talking to VE2RIJ, one east and one west of it.
In VE2RIJ node table i have the node from each side. But at VE2PSQ-4 located
on the west side i dont have the node from the east .The same thing occur on
the east side. So to me RIJ is not broascasting ?
can i have you help
Here is the listing of X1j ve2rij
and the g8bpq switch with the concern port # 5
The call comming from EAST are OLYBBS OLYNOD RIVLOU
The call comming from West are the rest of it

STITE:VE2RIJ} TheNet X-1J (640)
Circuit(PSQBBS:VE2PSQ VE2PNK)
STITE:VE2RIJ} Routes:
> 0 PSQLAN:VE2PSQ-4 192 8
  0 OLYNOD:VE2OLY-4 192 2
STITE:VE2RIJ} Nodes:
GRVTPK:VE2GRV      OLYBBS:VE2OLY      OLYNOD:VE2OLY-4
PSQBBS:VE2PSQ
PSQLAN:VE2PSQ-4    QBC:VE2RAJ         RAQI:VE2RIO        RIVLOU:VE2NY
SETIEN:VE2RZT      TRMTL:VE2RZT-1     YRQ:VE2TRP-5
parms
STITE:VE2RIJ}  75 50 192 203 3 4 1800 9 200 2 1 180 2 4 7200 64 20 9 4 10
50 65000 0 0 1 1
mode
STITE:VE2RIJ}  0 0 6 3 0 40 0 400 3 600 1 63 0 0 1 0 0
stats
STITE:VE2RIJ} Statistics
L1 Tx % : 9 10 2 1 10 23
L1 DCD% : 12 14 2 2 15 38
L1 RxOvr: 0 0 0 0
L1 TxUnd: 0 0 0 0
L2 RxCRC: 126 0 644 0
```

```
L2 heard: 209 0 660 0
L2 recvd: 175 0 528 0
L2 sent : 298 11 728 15
L2 RxRNR: 0 0 0 0
L2 RxREJ: 1 0 0 0
L2 TxRNR: 0 0 0 0
L2 TxREJ: 0 0 2 0
L2 fails: 5 0 2 0
L3 g'wyd: 0 0
L4 recvd: 64 167
L4 sent : 86 191
Buffers : 617 629 686 687 623 584
CPU loop: 361 378 413 402 370 305
Timers  : 52 131

This the west switch
all the call except PSQBBS PSQLAN STITE are comming from port 1 ve2raj

PSQLAN:VE2PSQ-4} G8BPQ Network System V4.07a (149)
Circuit(PSQBBS:VE2PSQ VE2PNK)
PSQLAN:VE2PSQ-4} Routes:
> 3 VE2PSQ 255 1
> 5 VE2RIJ 192 1
> 1 VE2RAJ 203 8
PSQLAN:VE2PSQ-4} Nodes:
VE2GPQ-4           GRVTPK:VE2GRV      PSQBBS:VE2PSQ
PSQLAN:VE2PSQ-4
QBC:VE2RAJ         RAQI:VE2RIO        SETIEN:VE2RZT
STITE:VE2RIJ
TRMTL:VE2RZT-1     TRPNOD:VE2TRP-4    YRQ:VE2TRP-5

Here is my bpqcfg.txt

OBSINIT=5                         ; INITIAL OBSOLESCENCE VALUE
OBSMIN=4                         ; MINIMUM TO BROADCAST
NODESINTERVAL=30                 ; 'NODES' INTERVAL IN MINS
IDINTERVAL=30                    ; 'ID' BROADCAST INTERVAL (UK Regs require
BTINTERVAL=30                       ; NO BEACONS
L3TIMETOLIVE=9                       ; MAX L3 HOPS
L4RETRIES=3                        ; LEVEL 4 RETRY COUNT
L4TIMEOUT=120                        ; LEVEL 4 TIMEOUT
L4DELAY=10                        ; LEVEL 4 DELAYED ACK TIMER
L4WINDOW=4                        ; DEFAULT LEVEL 4 WINDOW
MAXLINKS=15                        ; MAX LEVEL 2 LINKS (UP,DOWN AND
INTERNODE)
MAXNODES=60                        ; MAX NODES IN SYSTEM
MAXROUTES=5                        ; MAX ADJACENT NODES
MAXCIRCUITS=15                        ; NUMBER OF L4 CIRCUITS
minqual=10                        ; MINIMUM QUALITY TO ADD TO NODES TABLE
BBSQUAL=255                        ; BBS Quality relative to NODE - used to
BUFFERS=255
PACLEN=255                        ; MAX PACKET SIZE
TRANSDELAY=1                        ; TRANSPARENT MODE SEND DELAY - 1 SEC
T3=180                                ; LINK VALIDATION TIMER (3 MINS)
IDLETIME=900                          ; IDLE LINK SHUTDOWN TIMER (15 MINS)
BBS=0                                ; INCLUDE BBS SUPPORT
NODE=1                                ; INCLUDE SWITCH SUPPORT
HIDENODES=1                        ; IF SET TO 1, NODES START
ENABLE_LINKED=Y
TNCPORT
  COM=3
  APPLMASK=2
  APPLFLAGS=6
ENDPORT
PORT
        ID=LIEN RESEAU      ;com 2
        TYPE=ASYNC
        PROTOCOL=kiss
        IOADDR=2F8H
        INTLEVEL=3
        SPEED=4800
        CHANNEL=A
        QUALITY=192
        MAXFRAME=4
        TXDELAY=450
        SLOTTIME=100
        PERSIST=64
        FULLDUP=0
        FRACK=5000
```

```
        RESPTIME=300
        RETRIES=10
        PACLEN=255
        MHEARD=Y
ENDPORT


--------------------------------------------------------------------------------
73 de Dan,       ax.25net:    VE2PNK@VE2PSQ.#SFOY.PQ.CAN.NA
                  amprnet:    not yet but it's comming
                 internet:    daudet@biko.llc.org
                      fax:    418-622-5363
                      tel:    418-622-3238
--------------------------------------------------------------------------------
```

181. Re: RE : Getting back on course

```
From: mwestfal@iris.csci.csusb.edu (Michael Westfall)
Date: Mon, 25 Jul 1994 19:28:43 -0700 (PDT)
To: netsig@tcet.unt.edu
Message-ID: <9407260228.AA17653@iris.csci.csusb.edu>
Rendered body type: text/plain
```

```
In a former treatise, TAPR Network Special Interest Group spake thusly:
->
-> From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
-> Date: Mon, 25 Jul 94 10:49:25 PDT
->
->
-> We have ip encasulated in NET/ROM, I was curious what happens when
-> the network encounters an IP router: to make the network complete,
-> the IP router would need to encapsualte NET/ROM virtual circuits,
-> and also carry NET/ROM broadcasts to other ip/NETROM gateways.
->
->    ...  Hank

TheNet X1J does provide IP encapsulated into NetRom.
It does not provide NetRom encapsulated into IP.

So, TheNet X1J cannot be used to provide NetRom wormholes over IP circuits.

Is this what you wanted to know? or am I just butting in where I don't belong?


--------------------------------------------------------------------------------
73 de Mike,      ax.25net:    N6KUY@W6JBT.#SOCA.CA.USA.NA
                  amprnet:    n6kuy@n6kuy.ampr.org [44.18.0.49]
                internet :    mwestfal@silicon.csci.csusb.edu
GCS/M { -d+ p+ c++ l u++ e+(*) m++(-) s/+ !n-(---) h-- !f g+ w+ t++ r-(--) y+ }
--------------------------------------------------------------------------------
```

182. Modern Windows TCP/IP and AX.25

```
From: glg@balrog.k8lt.ampr.org (Gary L. Grebus)
Date: Tue, 26 Jul 94 00:36 EDT
To: netsig@tcet.unt.edu
Message-ID: <m0qSeFf-00074XC@balrog.k8lt.ampr.org>
Rendered body type: text/plain
```

```
>From: KY1TLuck@aol.com
>
>My goal is to somehow allow Windows-based software, perhaps even some unique
>servers that I code, to be available from MY setup, via the local TCP/IP
>switches.
>
That's basically what the ethrax25 packet driver will let you do (in a
minimal fashion).  The picture looks something like:

Windows Application <=1=> TCP/IP stack <=2=> Network Driver <=3=> network
(ftp, gopher, etc)        (SuperTCP, etc)                        hardware

The inteface at <=1=> is usually WinSock, a programming interface for
letting windows applications talk TCP/IP.

There are a couple of different interfaces in use at <=2=>.  Etherax25
implements one called the "Packet Driver" interface.  I don't know if
the Internet in a Box supports this interface.

There is a Network Driver for each different kind of network hardware
(e.g. each model of Ethernet adapter).  The network hardware which
Ethrax25 supports at <=3=> is a PC serial port connected to a KISS TNC.
```

It does a more than most Network Drivers, in that it converts
packets intended for Ethernet (because that's what most
Windows TCP/IP stacks support) into packets encapsulated in AX.25,
with KISS framing.

Given the 9600 baud, repeater-based IP network you have there in CT,
this may work quite well, given a TCP stack and applications that can
be configured (or adapt) to the longer round-trip times.

The picture is my model for how end-users should be connected to the network.
The protocols exist to make most of this self-configuring.

The main limitation is currently finding a suitable TCP stack. I'd like
to figure out if it would be possible to graft a WinSock interface
onto NOS, which already has a suitable TCP implementation,
supports all the interesting (for radio) network hardware, and is
freely available. I suspect this is going to be hard to do, since NOS
is inherently a DOS program, and would therefore have to run in a DOS
box. There needs to be some sort of inter-process communication path
that would tie together the top of the socket layer in the Windows
app with the the bottom of the socket layer in NOS.

73,

        /gary
        K8LT

Gary L. Grebus   Home: glg@k8lt.ampr.org (decvax!balrog!glg)
Brookline, NH   Work: grebus@bxb.dec.com
                        Ham Packet: K8LT@WA1PHY.#EMA.MA.USA

183. Re: Abandoning The Network Goals

From: djk@dirku.demon.co.uk (Dirk-Jan Koopman)
Date: Tue, 26 Jul 1994 08:29:54 +0200 (BST)
To: netsig@tcet.unt.edu
Message-ID: <m0qSgxW-0004g8C@dirku>
Rendered body type: text/plain

> From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
> Subject: Re: Abandoning The Network Goals
> To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
> Date: Mon, 25 Jul 94 10:46:49 PDT
>
> >
> > [stuff deleted]
> > >
> > > - 1200 baud sucks rocks. Simply put, its speed makes it unuseable for
> > > practical multi-user real-time system that comes anywhere near its
> > > saturation point. (Somone help me. On a CSMA system, assuming NO hidden
> > > terminals, what is the "saturation" point as a percentage? (I.E.
> > > the point at which throughput starts going down...)) There is simply
> > > not enough bandwidth to support reasonably intelligent high-level
> protocols.
> > > >From a realistic standpoint, it *MUST* be supported because that is what
> most
> > > people have and it is therefore important to support it to a reasonable
> > > degree, bearing in mind its limitations.
> >
> > about 18%
>
> My own measurements, at 9600 baud over a 55 mile path on 70 cm show
> closer to 80%. What are we measuring here?
>

The question I was answering was the bit about the 'saturation point'.
Half duplex CSMA with many stations (none hidden) all randomly wanting
send a packet will (theoretically) saturate @ 18% (see Tanenbaum). If
there are only two stations then you can get much higher thruputs
although I can't see how you are going to get 80% on half-duplex....

Dirk

184. Re: Disaster Network Nodes

From: ssampson@sabea-oc.af.mil (Steve Sampson)
Date: Tue, 26 Jul 1994 07:06:42 -0500 (CDT)
To: netsig@tcet.unt.edu
Message-ID: <9407261206.AA00845@sabea-oc.af.mil>

Rendered body type: text/plain

> Gee ... our experience with NET/ROM protocol at 9600 baud sounds EXACTLY
> like your experience with ip at 9600. We regularly transfer MB files
> over 9600 baud NET/ROM (actually g8bpq ...) links, and it doesn't take
> "30 days" ...

I think your eyes are getting brown, but that's only a personal opinion. The chances of that happening are zero using more than one TheNet or BPQ node.

> how about some actual measured comparisons?

OK, yes, please send them on. We want to see the facts from you - proof.

>> One of the stated purposes of the Amateur Radio Service (ARS) by the FCC
>> is to provide communications in the event of disaster.
>>
>> What solution would you use to solve the [example] communications problem?

> I would use a vehicle to carry the paper, mag tape, or diskettes
> to Eugene.

I can't stop laughing! Your right - The ARS has no capability to assist in disasters but does have a fine CW club at the ARRL. Your answer however rates an F, as it does not extend a network to reach the disaster. Your solution assumes that vehicles will be allowed on the federal highways during a state of emergency, and they probably won't. You will have to use State Highway 97 which the National Guard is allowing limited access. The soldiers have been extorting bribes to get on the road, so you will also need plenty of money or contraband.

For a guy who's been "assisting in networking" since 1967 I am a little shocked at your limited answer and lack of vision. Sounds like someone let the air out of your tires old man.

--
Steve

185. Re: with X1J not broadcasting node

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Tue, 26 Jul 1994 10:06:55 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9407261043.C17634-0100000@kazak>
Rendered body type: text/plain

Dan you must have mis set the parameter telling the node which port you wish to send your nodes list to. I suggest you read the book and then check that parameter...

73, de karl k5di

186. Re: RE : Getting back on course

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Tue, 26 Jul 1994 09:52:48 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9407260920.A17634-0100000@kazak>
Rendered body type: text/plain

> I have it ...
>
> The question was directed toward the tcp/ip folks.
>
> We have ip encasulated in NET/ROM, I was curious what happens when
> the network encounters an IP router: to make the network complete,
> the IP router would need to encapsualte NET/ROM virtual circuits,
> and also carry NET/ROM broadcasts to other ip/NETROM gateways.
>
>   ... Hank

Hank I AM a tcp/ip folks. This weekend we got to watching an smtp and ftp that went through my x1j node. It was clear that these exchanges were being done by the IP router and TCP portions of the node because both stations use this node as a gateway and have an arp entry and ip entry for both stations. These exchanges seemed to go faster and did have much larger packets than those that use the netrom part of the node.

Now for your exact question, what happens if a tcp packet encounters a x1j node after passing through a netrom node. The answer is that the packet arriving at the x1j node will be a standard netrom packet and will be passed along as a netrom packet. The ip system will ignore

any netrom packet.

I hope this helps Hank, and the understanding of ip routing and
arp tables is NOT simple!

73 de karl k5di

187. Re: X-1 settings

From: ssampson@sabea-oc.af.mil (Steve Sampson)
Date: Tue, 26 Jul 1994 11:30:43 -0500 (CDT)
To: daudet@llc.org
Cc: netsig@tcet.unt.edu
Message-ID: <9407261630.AA04122@sabea-oc.af.mil>
Rendered body type: text/plain

> parms
> STITE:VE2RIJ} 75 50 192 203 3 4 1800 9 200 2 1 180 2 4 7200 64 20 9 4 10
> 50 65000 0 0 1 1

Don't! run default 192. Change this to:

p /2 81
p /3 80
p /4 255

This way pop-up nodes from kids don't screw up your network (they won't be
propagated by your node). Then enter fixed routes to your good neighbors.
(route 0 node + 192, etc).

> mode
> STITE:VE2RIJ} 0 0 6 3 0 40 0 400 3 600 1 63 0 0 1 0 0

Change:

mo /9 0   or
mo /9 2

This is why the node probably isn't working right. Read the docs, this is
explained better than I could.

--
Steve

188. Re: Getting back on track.

From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
Date: Tue, 26 Jul 94 09:52:58 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <9407260952.ZM7526@hanko>
Rendered body type: text/plain

On Jul 26, 8:06am, TAPR Network Special Interest Group wrote:
> Subject: Re: Getting back on track.
> From: bm@hydra.carleton.CA (Barry McLarnon VE3JF)
> Subject: Re: Getting back on track.
> To: netsig@tcet.unt.edu
> Date: Tue, 26 Jul 94 7:47:15 WET DST
>
> Hank sez:
> > Yup. NET/ROM has only laters 3 and 4.
> >
> > Who will design the session and application layers for NET/ROM?
>
> Some masochist with a penchant for wasting time, no doubt. :-)
>
> NET/ROM is broken at layer 3, due to its limited-horizon routing protocol
> and general lack of scalability. It is suitable only for small regional
> networks. If that's all you want, fine... but many of us want peer-to-peer
> networking over wide areas (and many more *will* want it after they
experience
> a network that works).
>
> Why build something on a house of cards? Many people are clinging doggedly
> to NET/ROM because they are comfortable with it, but it is fundamentally a
> dead end. It's time to move on...

Interesting comments.

Would you care to expand on them, and explain how tcp/ip will
work any better in a real network?

How will we "move on"? Who will do this work?

   ... Hank

--

Hank Oredson @ Mentor Graphics   Library Operations
Internet   : hank_oredson@mentorg.com   "Parts 'R Us!"
Amateur Radio: W0RLI@W0RLI.OR.USA.NOAM

189. Re: RE : Getting back on course

From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
Date: Tue, 26 Jul 94 09:53:48 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <9407260953.ZM7531@hanko>
Rendered body type: text/plain

On Jul 26, 8:55am, TAPR Network Special Interest Group wrote:
> Subject: Re: RE : Getting back on course
> From: mwestfal@iris.csci.csusb.edu (Michael Westfall)
> Subject: Re: RE : Getting back on course
> To: netsig@tcet.unt.edu
> Date: Mon, 25 Jul 1994 19:28:43 -0700 (PDT)
>
> In a former treatise, TAPR Network Special Interest Group spake thusly:
> ->
> -> From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
> -> Date: Mon, 25 Jul 94 10:49:25 PDT
> ->
> ->
> -> We have ip encasulated in NET/ROM, I was curious what happens when
> -> the network encounters an IP router: to make the network complete,
> -> the IP router would need to encapsualte NET/ROM virtual circuits,
> -> and also carry NET/ROM broadcasts to other ip/NETROM gateways.
> ->
> ->   ... Hank
>
> TheNet X1J does provide IP encapsulated into NetRom.
> It does not provide NetRom encapsulated into IP.
>
> So, TheNet X1J cannot be used to provide NetRom wormholes over IP circuits.
>
> Is this what you wanted to know? or am I just butting in where I don't
belong?

Exactly the answer I was looking for.

Thank you.

   ... Hank

--

Hank Oredson @ Mentor Graphics   Library Operations
Internet   : hank_oredson@mentorg.com   "Parts 'R Us!"
Amateur Radio: W0RLI@W0RLI.OR.USA.NOAM

190. Re: Abandoning The Network Goals

From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
Date: Tue, 26 Jul 94 09:55:41 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <9407260955.ZM7536@hanko>
Rendered body type: text/plain

On Jul 26, 9:43am, TAPR Network Special Interest Group wrote:
> Subject: Re: Abandoning The Network Goals
> From: djk@dirku.demon.co.uk (Dirk-Jan Koopman)
> Subject: Re: Abandoning The Network Goals
> To: netsig@tcet.unt.edu
> Date: Tue, 26 Jul 1994 08:29:54 +0200 (BST)
>
> >

> > From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
> > Subject: Re: Abandoning The Network Goals
> > To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
> > Date: Mon, 25 Jul 94 10:46:49 PDT

> > > about 18%
> >
> > My own measurements, at 9600 baud over a 55 mile path on 70 cm show
> > closer to 80%. What are we measuring here?
> >
>
> The question I was answering was the bit about the 'saturation point'.
> Half duplex CSMA with many stations (none hidden) all randomly wanting
> send a packet will (theoretically) saturate @ 18% (see Tanenbaum). If
> there are only two stations then you can get much higher thruputs
> although I can't see how you are going to get 80% on half-duplex....

Now I understand what you were measuring.

My 80% is based on maximum theoretical throughput (cf Tannenbaum).
Yes, that is with two stations, half duplex.

   ... Hank

--

Hank Oredson @ Mentor Graphics   Library Operations
Internet   : hank_oredson@mentorg.com   "Parts 'R Us!"
Amateur Radio: W0RLI@W0RLI.OR.USA.NOAM

191. Re: Disaster Network Nodes

From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
Date: Tue, 26 Jul 94 09:59:04 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <9407260959.ZM7541@hanko>
Rendered body type: text/plain

On Jul 26, 10:04am, TAPR Network Special Interest Group wrote:
> Subject: Re: Disaster Network Nodes
> From: ssampson@sabea-oc.af.mil (Steve Sampson)
> Subject: Re: Disaster Network Nodes
> To: netsig@tcet.unt.edu
> Date: Tue, 26 Jul 1994 07:06:42 -0500 (CDT)

> > I would use a vehicle to carry the paper, mag tape, or diskettes
> > to Eugene.
>
> I can't stop laughing! Your right - The ARS has no capability to assist in
> disasters but does have a fine CW club at the ARRL. Your answer however rates
> an F, as it does not extend a network to reach the disaster. Your solution
> assumes that vehicles will be allowed on the federal highways during a state
> of emergency, and they probably won't. You will have to use State Highway 97
> which the National Guard is allowing limited access. The soldiers have been
> extorting bribes to get on the road, so you will also need plenty of money or
> contraband.

During those emergencies where I have been directly involved in things
like you suggest, there was no problem at all finding a vehicle.

It had lots of flashing lights, and was driven by someone carrying
appropriate credentials and weapons, and got where it needed to go
with little problem. In one case the vehicle was a Navy jet, but I
didn't get to ride - just deliver the tapes to the pilot, who took
them where they were needed VERY quickly.

Let's get this back on topic.

   ... Hank

--

Hank Oredson @ Mentor Graphics   Library Operations
Internet   : hank_oredson@mentorg.com   "Parts 'R Us!"
Amateur Radio: W0RLI@W0RLI.OR.USA.NOAM

192. Re:(2) Modern Windows TCP/IP and AX.25

From: tmoulton@ram.net
Date: Tue, 26 Jul 94 14:51:52 EDT
To: netsig@tcet.unt.edu
Message-ID: <05178.15021573@RAMail>
Rendered body type: text/plain

>From: ssampson@sabea-oc.af.mil (Steve Sampson)
>Subject: Re: Modern Windows TCP/IP and AX.25
>To: netsig@tcet.unt.edu
>Date: Sun, 24 Jul 1994 09:45:52 -0500 (CDT)
>
Steve,
>
>Regarding Rose: Rose at 1200 sucks. Rose like TheNet has a maximum packet s
>ize

most anything at 1200 baud stinks.
I am working on allowing 1K or 2K packets...

>designed for low baud rates. These small packet sizes are limits at high sp
>eed.
>The data size should be longer than the keyup time.
 If you can transmit more than one packet per transmission it isn't as bad
 as you make it sound.
>In this regard there is
> a
>new Rose being designed for PC's and large packets. Once this is done, Rose
>
>will cease being a toy.
ROSE is not being redesigned. It runs fine in a 64k address space, 640K
address space or what ever.
>Most of the Rose nets around here waste the bandwidt
>h
>by ACKing each other all day and night. The channel will be quiet and the R
>oses
>are RR'ing away with each other
If the channel is idle it's not such a problem, besides network trunks should
be on backbone frequencies away from users anyway...

>This of course is the problem with Virtual
>Circuit mode, but could be easily solved by the owners reading the manual (R
>TFM)
>and backing off on the timers a bit. Course I wouldn't have to see this if
>they
>weren't "networking" on 145.01. I think Rose or IP could do what we need, o
>nly
>if used at high speed.
>--
>Steve
>
>
ROSE runs great at 9600, adjust your TXDelay and go for it.

Also ROSE is great for IP, as it only adds 3 bytes overhead.
And with the next version (3.5) you will be able to take a Multi KB datagram
and fragment it with NOS to 256 byte packets and pump it through ROSE.

By the end of the year ROSE will support UI frames (UI in one end, UI out
the other end) this coupled with eventual support for 1K or 2K frame sizes
will make ROSE very usefull for IP (heck also for BBS's Mail For)

ROSE will also have a broadcast function that will allow a UI to be routed
to a specific set of addrresses (aka User Channels) so that ARP can be sent
out via ROSE as well...

Please try ROSE and you will agree with other sysops that it is a lot better
than other solutions.

The goal of ROSE is to provide Transparent connectivity for all modes of
AX.25 communication.

ROSE will support *ANY* Protocol that AX.25 supports.

tom, w2vy@ram.net

193. Re:(2) Getting back on track.

From: tmoulton@ram.net
Date: Tue, 26 Jul 94 15:08:21 EDT
To: netsig@tcet.unt.edu
Message-ID: <05179.15021573@RAMail>
Rendered body type: text/plain

Let us understand what ROSE, NetROM and TCP/IP really are.

ROSE is a network layer product - It gets you data from Here to There

NETROM is the same thing, only since it is datagram based it needs to
include a transport protocol

TCP/IP is a full stack that can run on top of almost any network as well
as some of it's own null network layers.

It likes to have a fairly reliable network, but doesn't assume that it is.

ROSE has extra address space reserved for user networks..

194. Re: ROSE vs

From: tmoulton@ram.net
Date: Tue, 26 Jul 94 15:12:50 EDT
To: netsig@tcet.unt.edu
Cc: rose@kb2ear.overleaf.com
Message-ID: <05177.15021573@RAMail>
Rendered body type: text/plain

Rob

The bottom line is that the Telephone Pioneers are putting in a transparent
network that can support both TheNet and IP users as well as plain old AX.25
users (bbs, keyboard and the like).

The system will work and not slow down or block any of the other uses it
could be put to...

and with some of the enhancements that are coming it is going to get better
and better.

I will be happy to answer any specific question you might have, either here
or privately.

73, Tom
W2VY@RAM.NET

195. Re:(2) Getting back on track.

From: tmoulton@ram.net
Date: Tue, 26 Jul 94 17:03:18 EDT
To: netsig@tcet.unt.edu
Message-ID: <05180.15021573@RAMail>
Rendered body type: text/plain

>From: net_sig@tcet.unt.edu
>Message-Id: <9407262051.AA145199@tcet.unt.edu>
>Subject: Re: Getting back on track.
>To: tmoulton@ram.net
>Date: Tue, 26 Jul 94 15:51:56 CDT
>Reply-To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
>
>From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
>Subject: Re: Getting back on track.
>To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
>Date: Tue, 26 Jul 94 09:52:58 PDT
>
>On Jul 26, 8:06am, TAPR Network Special Interest Group wrote:
>> Subject: Re: Getting back on track.
>> From: bm@hydra.carleton.CA (Barry McLarnon VE3JF)
>> Subject: Re: Getting back on track.
>> To: netsig@tcet.unt.edu
>> Date: Tue, 26 Jul 94 7:47:15 WET DST
>>
>> Hank sez:
>> > Yup. NET/ROM has only laters 3 and 4.
>> >
>> > Who will design the session and application layers for NET/ROM?
>>
>> Some masochist with a penchant for wasting time, no doubt. :-)
>>
>> NET/ROM is broken at layer 3, due to its limited-horizon routing protocol

>> and general lack of scalability. It is suitable only for small regional
>> networks. If that's all you want, fine... but many of us want peer-to-pee
>r
>> networking over wide areas (and many more *will* want it after they
>experience
>> a network that works).

ROSE can handle networks with *ANY* number of nodes and has been designed
from day #1 to be able to provide National and Global networking.

>>
>> Why build something on a house of cards? Many people are clinging doggedl
>y
>> to NET/ROM because they are comfortable with it, but it is fundamentally a
>
>> dead end. It's time to move on...
>
>Interesting comments.
>
>Would you care to expand on them, and explain how tcp/ip will
>work any better in a real network?
>
>How will we "move on"? Who will do this work?
>
>   ... Hank

To move on for TCP/IP we need to find the best performing network solution so
that IP is not constrained by items beyond your control.

My biased opionion is that ROSE is (or atleast Will Be the best solution)

>
>
>--
>
>Hank Oredson @ Mentor Graphics   Library Operations
>Internet   : hank_oredson@mentorg.com   "Parts 'R Us!"
>Amateur Radio: W0RLI@W0RLI.OR.USA.NOAM
>

196. Re: with X1J not broadcasting node

From: Jack Taylor <n7oo@huachuca-emh8.army.mil>
Date: Tue, 26 Jul 94 15:55:10 MST
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <9407262303.AA155401@tcet.unt.edu>
Rendered body type: text/plain

Daniel the clue to ve2rij not broadcasting is in the parameter string.
You stated it started thusly: VE2RIJ} 75 50 192 203 3 4 1800...etc.

If parameter #6 is greather than #5, the node's broadcasts will include
no destinations (other nodes) than itself. If you reverse the values
for parameters #5 and #6 above, your problem will be resolved. In other
words try: VE2RIJ} 75 50 192 203 4 3 1800...etc.

73 de Jack

197. Re: X-1 settings

From: mwestfal@iris.csci.csusb.edu (Michael Westfall)
Date: Tue, 26 Jul 1994 19:35:43 -0700 (PDT)
To: netsig@tcet.unt.edu
Message-ID: <9407270235.AA18854@iris.csci.csusb.edu>
Rendered body type: text/plain

In a former treatise, TAPR Network Special Interest Group spake thusly:
->
-> From: ssampson@sabea-oc.af.mil (Steve Sampson)
-> Subject: Re: X-1 settings
-> To: daudet@llc.org
-> Date: Tue, 26 Jul 1994 11:30:43 -0500 (CDT)
->
->
-> Don't! run default 192. Change this to:
->
-> p /2 81
-> p /3 80
-> p /4 255
->
-> This way pop-up nodes from kids don't screw up your network (they won't be

-> propagated by your node). Then enter fixed routes to your good neighbors.
-> (route 0 node + 192, etc).

This is a dilemma. By setting fixed routes to your good neighbors, you
defeat the dynamic routing capability of Net/Rom (& its clones).

On the other hand, Kids Playing Packet Radio screw up the network when they
do their once-a-week sign-on with netrom broadcasts in verbose mode if you
leave dynamic routing active.

Personally, I think I'd stick with Default 192, and NEVER enter fixed routes
to anyone. I WOULD add nodes to my lockout list as appropriate. Better to
leave the dynamic routing functional and lock out the LIDs as necessary.

As an example of how fixed routes can screw things up, consider:

There are 3 nodes on a channel, all can hear each other.
Node A has his default set to 80, choosing to add fixed routes to his
            approved neighbors, which includes node B, but not node C.
Node B has his set to 192, the commonly agreed standard.
Node C, not having been fixed-routed at node A thus has 2 routing entries
            at node A, one direct to node C with a quality rating of 80,
            and one via node B at a quality rating of something between
            80 and 192.

Now, since the indirect route has a higher quality rating than the direct route,
netrom packets going from node A to node C will go thru node B, causing
the packet to take double bandwidth.

Get a couple more nodes like node C on the channel and things come to a
grinding halt!

Node A's node-op, in his zeal to shut out each and everyone else whom
he hasn't personally approved to be on his frequency, has inadvertently
become the LID, himself! 'Course, he won't recognize it and will blame all
the node C types for the problems...

In my opininion, you shouldn't use fixed routing. There may be some
cases where fixed routing might be desirable for maintaining a link to
a marginal node, but you would lock it in at a quality rating of something
LESS than your default, so that it wouldn't get propogated too far.
----
73 de Mike,   ax.25net: N6KUY@W6JBT.#SOCA.CA.USA.NA
                  amprnet: n6kuy@n6kuy.ampr.org [44.18.0.49]
                internet :   mwestfal@silicon.csci.csusb.edu
GCS/M { -d+ p+ c++ l u++ e+(*) m++(-) s/+ !n-(---) h-- !f g+ w+ t++ r-(--) y+ }
----

198. Re: Getting back on track

From: wb9mjn@uugate.wa7slg.ampr.org
Date: Tue, 26 Jul 94 22:27:00 mdt
To: netsig@tcet.unt.edu
Message-ID: <96108@uugate.wa7slg.ampr.org>
Rendered body type: text/plain

Hi Hank and Barry. Yes, u can do the peer to peer stuff peicemeal. And have
to ask the guy u want to send to, what he has, and how to go about getting
to it. Or u can run IP and just ask him for his IP address, and u then know
he has smtp, and ftp, amoung other things. And IF we build a network that
can support direct user activity, u ll be able to get ur level 3 frames
right to the guy, without hunting and pecking down the network.

 What s magic is not that TCPIP has a transport layer, what s magic is that
its addressing and routing schemes are robust enuf that any user can part-
icipate in level 3 communciations. That is his home computer can communicate
on level 3. This can never happen with NETROM. It couldn t even happen with
NETROM for the Chicagoland area, let alone the state of Illinois, the US,
or North America.

 The choice is , for us, do we build a network with user funding that is
only good for servers to talk to each other, from domain to domain, or
one that the user can send his packets from domain across domain until the
ultimate destination, the real station the packet user wants to communicate
with, is reached. And more practically, can we build servers big and bad
enuf to keep up with users who will in a few years have as much computer
umpf, cheaply, as the expensive server has today. No. All we can do is
make sure the links we build completely utilise the spectrum they occupy.
And let the users get as much thru them as possible.

Yes, we will still need servers, for things that can t practically be distributed to all the users. That all users may not want all the time, either. The servers can make large amounts of info available on demand, without excessive network loading. By distributing the large amounts of info everywhere, on availability. But servers cannot be the spigot thru which networking flows. That has to be a user to user activity.

In building networks we need to strive for the best Baud/HZ-Second at a economic level of reliability. Oops, change that Baud to Bits. If the network can t be user'd directly (used by users, hi), from my experience the network would be something few people will be satisfied with.

199. Re:(2) Modern Windows TCP/IP and AX.25

From: tmoulton@ram.net
Date: Tue, 26 Jul 94 14:51:52 EDT
To: netsig@tcet.unt.edu
Message-ID: <05178.15021573@RAMail>
Rendered body type: text/plain

>From: ssampson@sabea-oc.af.mil (Steve Sampson)
>Subject: Re: Modern Windows TCP/IP and AX.25
>To: netsig@tcet.unt.edu
>Date: Sun, 24 Jul 1994 09:45:52 -0500 (CDT)
>
Steve,
>
>Regarding Rose: Rose at 1200 sucks. Rose like TheNet has a maximum packet s
>ize

most anything at 1200 baud stinks.
I am working on allowing 1K or 2K packets...

>designed for low baud rates. These small packet sizes are limits at high sp
>eed.
>The data size should be longer than the keyup time.
 If you can transmit more than one packet per transmission it isn't as bad
 as you make it sound.
>In this regard there is
> a
>new Rose being designed for PC's and large packets. Once this is done, Rose
>
>will cease being a toy.
ROSE is not being redesigned. It runs fine in a 64k address space, 640K address space or what ever.
>Most of the Rose nets around here waste the bandwidt
>h
>by ACKing each other all day and night. The channel will be quiet and the R
>oses
>are RR'ing away with each other
If the channel is idle it's not such a problem, besides network trunks should be on backbone frequencies away from users anyway...

>This of course is the problem with Virtual
>Circuit mode, but could be easily solved by the owners reading the manual (R
>TFM)
>and backing off on the timers a bit. Course I wouldn't have to see this if
>they
>weren't "networking" on 145.01. I think Rose or IP could do what we need, o
>nly
>if used at high speed.
>--
>Steve
>
>
ROSE runs great at 9600, adjust your TXDelay and go for it.

Also ROSE is great for IP, as it only adds 3 bytes overhead.
And with the next version (3.5) you will be able to take a Multi KB datagram and fragment it with NOS to 256 byte packets and pump it through ROSE.

By the end of the year ROSE will support UI frames (UI in one end, UI out the other end) this coupled with eventual support for 1K or 2K frame sizes will make ROSE very usefull for IP (heck also for BBS's Mail For)

ROSE will also have a broadcast function that will allow a UI to be routed to a specific set of addrresses (aka User Channels) so that ARP can be sent out via ROSE as well...

Please try ROSE and you will agree with other sysops that it is a lot better

than other solutions.

The goal of ROSE is to provide Transparent connectivity for all modes of
AX.25 communication.

ROSE will support *ANY* Protocol that AX.25 supports.

tom, w2vy@ram.net

200. Re:(2) Getting back on track.

From: tmoulton@ram.net
Date: Tue, 26 Jul 94 15:08:21 EDT
To: netsig@tcet.unt.edu
Message-ID: <05179.15021573@RAMail>
Rendered body type: text/plain

Let us understand what ROSE, NetROM and TCP/IP really are.

ROSE is a network layer product - It gets you data from Here to There

NETROM is the same thing, only since it is datagram based it needs to
include a transport protocol

TCP/IP is a full stack that can run on top of almost any network as well
as some of it's own null network layers.

It likes to have a fairly reliable network, but doesn't assume that it is.

ROSE has extra address space reserved for user networks..

201. Re: ROSE vs

From: tmoulton@ram.net
Date: Tue, 26 Jul 94 15:12:50 EDT
To: netsig@tcet.unt.edu
Cc: rose@kb2ear.overleaf.com
Message-ID: <05177.15021573@RAMail>
Rendered body type: text/plain

Rob

The bottom line is that the Telephone Pioneers are putting in a transparent
network that can support both TheNet and IP users as well as plain old AX.25
users (bbs, keyboard and the like).

The system will work and not slow down or block any of the other uses it
could be put to...

and with some of the enhancements that are coming it is going to get better
and better.

I will be happy to answer any specific question you might have, either here
or privately.

73, Tom
W2VY@RAM.NET

202. Re:(2) Getting back on track.

From: tmoulton@ram.net
Date: Tue, 26 Jul 94 17:03:18 EDT
To: netsig@tcet.unt.edu
Message-ID: <05180.15021573@RAMail>
Rendered body type: text/plain

>From: net_sig@tcet.unt.edu
>Message-Id: <9407262051.AA145199@tcet.unt.edu>
>Subject: Re: Getting back on track.
>To: tmoulton@ram.net
>Date: Tue, 26 Jul 94 15:51:56 CDT
>Reply-To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
>
>From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
>Subject: Re: Getting back on track.
>To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
>Date: Tue, 26 Jul 94 09:52:58 PDT
>
>On Jul 26, 8:06am, TAPR Network Special Interest Group wrote:
>> Subject: Re: Getting back on track.
>> From: bm@hydra.carleton.CA (Barry McLarnon VE3JF)
>> Subject: Re: Getting back on track.

>> To: netsig@tcet.unt.edu
>> Date: Tue, 26 Jul 94 7:47:15 WET DST
>>
>> Hank sez:
>> > Yup. NET/ROM has only laters 3 and 4.
>> >
>> > Who will design the session and application layers for NET/ROM?
>>
>> Some masochist with a penchant for wasting time, no doubt. :-)
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>> NET/ROM is broken at layer 3, due to its limited-horizon routing protocol
>> and general lack of scalability. It is suitable only for small regional
>> networks. If that's all you want, fine... but many of us want peer-to-pee
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>> a network that works).

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from day #1 to be able to provide National and Global networking.

>>
>> Why build something on a house of cards? Many people are clinging doggedl
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>> to NET/ROM because they are comfortable with it, but it is fundamentally a
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>> dead end. It's time to move on...
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>Interesting comments.
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>Would you care to expand on them, and explain how tcp/ip will
>work any better in a real network?
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>How will we "move on"? Who will do this work?
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To move on for TCP/IP we need to find the best performing network solution so
that IP is not constrained by items beyond your control.

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>--
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>Hank Oredson @ Mentor Graphics   Library Operations
>Internet   : hank_oredson@mentorg.com   "Parts 'R Us!"
>Amateur Radio: W0RLI@W0RLI.OR.USA.NOAM
>

203. Re: with X1J not broadcasting node

From: Jack Taylor <n7oo@huachuca-emh8.army.mil>
Date: Tue, 26 Jul 94 15:55:10 MST
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <9407262303.AA155401@tcet.unt.edu>
Rendered body type: text/plain

Daniel the clue to ve2rij not broadcasting is in the parameter string.
You stated it started thusly: VE2RIJ} 75 50 192 203 3 4 1800...etc.

If parameter #6 is greather than #5, the node's broadcasts will include
no destinations (other nodes) than itself. If you reverse the values
for parameters #5 and #6 above, your problem will be resolved. In other
words try: VE2RIJ} 75 50 192 203 4 3 1800...etc.

73 de Jack

204. Re: Computer Based node

From: dreamer@lhaven.UUmh.Ab.Ca (Lawrence *The Dreamer* Chen)
Date: Tue, 26 Jul 1994 11:25:52 -0400
To: netsig@tcet.unt.edu
Message-ID: <9407261525.5qj6@lhaven.UUmh.Ab.Ca>
Rendered body type: text/plain

Hi TAPR (TAPR Network Special Interest Group), in <9407181529.AA162006@tcet.unt.edu> on Jul 18 you
wrote:

>

> Using PC's in remote locations is are becoming much more fesilble with the cost
> drop over the last few years and the fact that you can run most of the newer
> boards from a regular +12/+5 supply...thus you don't have problems with the
> powersupply that are typically provided for home use...which have problems
> again in uncontrolled temperature situations.
>
Speaking of PC's in remote locations, has anybody converted a PC to run off of
a 12V DC only system? (without resorting to an inverter). In the interest of
cost and availability....we might only have a 12V DC system at a remote
location, which is fine for the radio equipment....

--
 "Just a Crazy Engineer with an Amiga and an HP48sx"   - The Dreamer
 Email: dreamer@lhaven.uumh.ab.ca or "Lawrence Chen" @ 1:134/3002
 PHONE: +1 403 526 6019   FAX: +1 403 529 5102   CIS: 74200,2431
 Praxis Society K12 BBS: +1 403 529 1610 Lunatic Haven: +1 403 526 6957
 CYSNET Packet BBS: +1 403 526 4304 LHaven Dialup: +1 403 526 5035
 Packet: VE6LKC @ VE6PAQ.AB.CAN.NOAM

205. RE: with X1J not broadcasting node

From: roberts@ses6a.bt.co.uk
Date: Wed, 27 Jul 1994 11:09:42 +0100
To: netsig@tcet.unt.edu
Message-ID: <9407271010.AA168390@tcet.unt.edu>
Rendered body type: text/plain

>From: NAME: Dave Roberts
        FUNC: DTI14
        TEL: 0473 224566   <ROBERTS AT A1 AT SES6A>
To: "netsig@tcet.unt.edu" @ R11F @ MRGATE

There are two immediate problems.

1. PARM number 5 is less than PARM number 6. This means that when it
   hears a node broadcast, it will update its table, but as the default
   initialisation is less than the minimum to broadcast, it will never
   transmit them.

2. MODE parameter number 9 is set to 3. This will cause problems. In
   the documentation it suggests that 0 or 2 should be used, never 1
   or 3. Set it to 0 usually.

Dave
G8KBB

206. summary of protocols available?

From: Brian Greiner <bgreiner@accesspt.North.Net>
Date: Wed, 27 Jul 1994 08:53:14 -0400 (EDT)
To: netsig@tcet.unt.edu
Message-ID: <m0qT8Tz-0004HQC@accesspt.north.net>
Rendered body type: text/plain

There's been a lot of discussion (both technical and "religious") about
the various protocols ... eg. ROSE, X1J, NETROM, TheNet, etc.

Is there easily-available information about these protocols lurking
somewhere? Preferably in summary form, as I don't claim to be a
network guru!

As a relative newcomer to the network-side of amateur radio, it's tough
to get a handle on what all the shouting is about.

Regards,

Brian Greiner, VE3SPZ
Internet   bgreiner@accesspt.north.net
Ham Radio   VE3SPZ@VE3YRA.#SCON.ON.CAN.NA

207. RE: TCP/IP inna box...

From: "Battles, Brian" <bbattles@arrl.org>
Date: Wed, 27 Jul 94 11:00:00 EDT
To: netsig <netsig@tcet.unt.edu>
Message-ID: <2E3677D1@arrl.org>
Rendered body type: text/plain

Luck urder, KY1T, writes:

LH> I spotted an advertisement for "Internet in a Box" software

```
LH> recently and then requested a file on it. What struck me
LH> interesting about it was the possibility of MAYBE, just
LH> MAYBE being able to use it for Amateur Radio TCP/IP purposes.

LH> They're naturally fond of frequently mentioning how it can be
LH> used with ANY TCP/IP transport mechanism, but I thought I'd
LH> ask you people before getting unduly excited.

  [stuff deleted]

LH> The AIR Series provides fast and reliable
LH> connectivity over any TCP/IP transport. Seamless
LH> integration with your Windows desktop makes the
LH> AIR Series easy-to-use and support. And the ability
LH> to run over any TCP/IP transport...

LH> The AIR Series  provides fast and reliable connectivity over
LH> any TCP/IP transport. Seamless integration with your Windows
LH> desktop makes the AIR Series easy-to-use and support. And
LH> the ability to run over any TCP/IP transport reduces the
LH> cost of your internetworking solutions....

  What good is this? If you're gonna run TCP/IP over amateur
packet radio, you have to have those occasional crashes,
lockups and reboots. Otherwise, it doesn't feel like
*real* Amatur Radio!

 CUL es 73 de BB
 _____________________________________________________________
 Brian Battles, WS1O    The World's Foremost Authority

 QST Features Editor, ARRL HQ
 Internet  bbattles@arrl.org  Compu$erve  70007,3373
 MCI       215-5052           Amprnet     ws1o@ws1o-2.ampr.org
  - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
    ALL COMMENTS ARE MY OWN PRIVATE, PERSONAL REMARKS AND
     IN NO WAY CONSTITUTE OFFICIAL ARRL VIEWS OR POLICY.
```

208. X1J buffer problems (+parms)

```
From: mfoster@amoco.com (Michael H. Foster)
Date: Wed, 27 Jul 94 10:06:39 CDT
To: netsig@tcet.unt.edu
Message-ID: <9407271506.AA19352@gp3.trc.amoco.com>
Rendered body type: text/plain
```

Here are the X1J params for the local nodes. Node BVL has been troublesome, continually running low in buffer space. The local control op has attempted to adjust some of the parameters hoping to affect this condition, but the problem persists. Anyone care to comment on these settings or running low in buffer space?

```
TUL:WA5LVT}       100 70 70 255 7 5 1800 10 300 2 6 180 4 4  900 64 10 8 2 10 100 18000 1 0 2 1
OKM:WD5HJZ-1}      50 80 80 255 6 4 1800 16 300 2 6 180 4 4  900 64 10 8 2 10 100 18000 1 0 2 0
BVL:N5JST-1}       25 70 70 255 7 5 1800 10 200 2 3 180 4 4 1800 64 10 8 2 10 100 18000 1 0 1 1
BVL:N5JST-1}       50 70 70 255 7 5 3600 10 200 2 3 180 4 4 3600 64 10 8 2 10 100 18000 1 0 1 1
PSKA:N5ZQW-14}     25 70 70 255 7 5 1800 10 200 2 3 180 4 4 1800 64 10 6 2  5 100 18000 1 0 1 1
BEAR:KA5NVE-5}     10 80 80 255 7 5 1800 10 180 2 3 180 2 4  900 64 10 8 2 10 100 18000 1 0 2 1
```

TUL and BVL are carrying kb-kb, dxclus, and a few tcp connections and are quite busy on .01.
BEAR and PSKA carry BBS traffic and are also quite busy.

- Mike Foster, wa5txx
mfoster@amoco.com

209. Re: Getting back on track

```
From: hank_oredson@rainbow.mentorg.com (Hank Oredson)
Date: Wed, 27 Jul 94 09:15:29 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <9407270915.ZM11970@hanko>
Rendered body type: text/plain
```

On Jul 27, 5:15am, TAPR Network Special Interest Group wrote:
> Subject: Re: Getting back on track
> From: wb9mjn@uugate.wa7slg.ampr.org
> Subject: Re: Getting back on track
> To: netsig@tcet.unt.edu
> Date: Tue, 26 Jul 94 22:27:00 mdt
>
>
> Hi Hank and Barry. Yes, u can do the peer to peer stuff peicemeal. And have

> to ask the guy u want to send to, what he has, and how to go about getting
> to it. Or u can run IP and just ask him for his IP address, and u then know
> he has smtp, and ftp, amoung other things. And IF we build a network that
> can support direct user activity, u ll be able to get ur level 3 frames
> right to the guy, without hunting and pecking down the network.

Hmmm ... the machine I'm on right now has an IP address, does not have
smtp, has ftp (but you can't access it from where you are). In this
particular network what you CAN assume is that the machine has CFI-ITC.

At home, the system has a published address, and six published
service sub-addresses. It doesn't have ip ...

The point is that all these things (with the sole exception of "internet
like hierarchical network addresses" and "a small set of well-known
applications") are available with ANY form of networking. Different network
protocols work differently, and I personally (as an application creator)
just don't care. What I do care about is that we have some standard
ways of doing things. I would prefer sockets, no matter what the protocol.
Just HOW my application running at server A connects to my application
running at server B makes zilch difference to me. I just want some
standard way for that to happen. tcp/ip CAN do this, although it mostly
doesn't as it is run over ham radio, as can NET/ROM, or ROSE, or CLOVER,
or AMTOR, or CW ... the key is standards ABOVER layers 3 - 4 ...

> What s magic is not that TCPIP has a transport layer, what s magic is that
> its addressing and routing schemes are robust enuf that any user can part-
> icipate in level 3 communciations. That is his home computer can communicate
> on level 3. This can never happen with NETROM. It couldn t even happen with
> NETROM for the Chicagoland area, let alone the state of Illinois, the US,
> or North America.

This is total nonesense - the exact opposite it what I've observed
in practice. My NET/ROM applications hook together with almost zero
problems. I've never been succesful in making NOS work in any useful
way, nor has anyone else in this part of the country.

> The choice is , for us, do we build a network with user funding that is
> only good for servers to talk to each other, from domain to domain, or
> one that the user can send his packets from domain across domain until the
> ultimate destination, the real station the packet user wants to communicate
> with, is reached. And more practically, can we build servers big and bad
> enuf to keep up with users who will in a few years have as much computer
> umpf, cheaply, as the expensive server has today. No. All we can do is
> make sure the links we build completely utilise the spectrum they occupy.
> And let the users get as much thru them as possible.

No, I don't think that is the choice. There are MANY other ways to
build a network.

> Yes, we will still need servers, for things that can t practically be
> distributed to all the users. That all users may not want all the time,
> either. The servers can make large amounts of info available on demand,
> without excessive network loading. By distributing the large amounts
> of info everywhere, on availability. But servers cannot be the spigot
> thru which networking flows. That has to be a user to user activity.
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> In building networks we need to strive for the best Baud/HZ-Second at a
> economic level of reliability. Oops, change that Baud to Bits. If the
> network can t be user'd directly (used by users, hi), from my experience
> the network would be something few people will be satisfied with.

Sure, agree ... good thing to "srive for", but the main thing we need to
do is gather support from Joe Ham to BUILD the network. If Joe Ham cannot
run tcp/ip, then our network MUST support whatever Joe Ham wants to do.

Yes, there will be those of us who do leading edge things, or do things
differently from Joe Ham. However we (the network builders) must keep
everything connected, no matter what protocol it happens to run.

The key here is clearly to have appropriate gateways and servers, as
required. The underlying protocols are much less important than the
ability to connect them all together for Joe Ham.

   ... Hank

--

Hank Oredson @ Mentor Graphics   Library Operations
Internet   : hank_oredson@mentorg.com   "Parts 'R Us!"
Amateur Radio: W0RLI@W0RLI.OR.USA.NOAM

210. Re: Getting Back on Track

From: ssampson@sabea-oc.af.mil (Steve Sampson)
Date: Wed, 27 Jul 1994 11:45:26 -0500 (CDT)
To: netsig@tcet.unt.edu
Cc: tmoulton@ram.net
Message-ID: <9407271645.AA04489@sabea-oc.af.mil>
Rendered body type: text/plain

tmoulton@ram.net says:
> Let us understand what ROSE, NetROM and TCP/IP really are.

I think you can assume the readership of the SIG is aware of what the
protocols are. Your comments come at a time when there was a great
discussion about networking infrastructure. The arguments have been:

1.   Pro Net/Rom   (Proprietary Protocol - No Source, Closed Development)
2.   Pro Rose   (Proprietary Protocol - No Source, Closed Development)
3.   Pro TCP/IP   (Open Protocol - Source, Development Complete)
4.   Something New (Open Protocol - Source, Design and Testing Stage)
5.   No Change   (No Higher Protocol - AX.25 Only, Development Complete)

The argument isn't that my religion is better than your religion, it is one
that is between the past and the future. We know where we have been, but are
searching for a better or more exciting path. Economics is very important, so
the system should be affordable. There are two systems which have shown
promise at the lowest network layers: IP and Rose. Both can be built on to
produce a better network. I know that X.25 works well, and I know that IP
works well. What I know doesn't work well, is half-duplex AX.25. So anything
developed on the AX.25 layer will be stillborn without limiting the design in
ways to offset the disadvantages of being half-duplex. What will be the layer
that IP and/or Rose will sit above to interface with RF? I really don't need
AX.25, and I've even done plain old SLIP over the air. The Ethernet packet
could even be used (and desireable at 1 and 10 Mbps). The German DAMA addition
to AX.25 is a significant enhancement. As you know the IP system is being
extended to solve the 32 bit address limit, or will be made obsolete by the
takeover of ATM and/or Frame Relay (You never see IP in the Trade magazines
anymore) so even IP and X.25 may be extinct as we know it today. So forget
about all this religion and let's go back to step 1.

I.   Agreement on Level 1 using RF.

Then comes step 2:

II.   Agreement on all the rest.

Level 1 may be as much a political issue as a technical one. Currently AX.25
is the only protocol in the United States which allows the transport of third-
party data. If the FCC will relax that rule it will be a political success.
If Unspecified codes could achieve the freedom of AX.25, Ham radio will
graduate from the dark ages. We would like to experiment with other protocols,
but we cannot transport any information over it that would enhance the
community or country, because the government prohibits unregulated designs.
It will take years to get third-party privelege for any Level 1 design, so the
Ham community should develop a system that allows for expansion and can deal
with the callsign problem. The FCC seems to be totally open to this. They
really don't care what the technique is, only that it be standardized and
they be able to monitor it. Once that is done they will give third-party
privelege. I've read the LAPA.TXT proposal on tcet.unt.edu and see it as only
an incremental improvement to AX.25. It doesn't seem to consider the problems
that have strangled Packet Radio since its inception (walkie-talkies and the
mag-mount on the fridge), that a network is only as good as the cheapest son
of a [gun] on the frequency. Something like DAMA or MACA needs to be part of
the design. If a Jim-Bob or Betty-Lou can ruin the network by unpacking their
Christmas present and plugging it in to the wall, the Level 1 isn't ready for
Prime Time.
--
Steve

211. RE: Manager & SYSOP - X1J

From: "David C. Bray" <TDCBR@hovmb.ion.chevron.com>
Date: 27 Jul 94 18:37:12 PDT

To: netsig@tcet.unt.edu
Message-ID: <199407280136.AA04757@portal.chevron.com>
Rendered body type: text/plain

To: NETSIG --INTERNET TAPR NETSIG

FROM: David C. Bray   dcbr@chevron.com
      CITC/CSD   CTN 675-3838 Area Code 303

SUBJECT: RE: Manager & SYSOP - X1J
>Wonder if someone could answer a couple of questions concerning the
>SYSOP and MANAGER commands for X1J...
>
>First, as I interrupt the X1J DOCs, the manager is suppose to be able to
>preform the same commands as the SYSOP... Is this correct? How is the
>MANAGER's call set?

You enter the MANAGER mode the same way that you enter the SYSOP mode.
It uses the same password authentication algorithm (five numbers
corresponding to five letters). It also uses the same password as SYSOP.
The MANAGER can perform the same commands as the SYSOP, but there is one
difference...

>
>The problem we seem to be having is that when a reset has to be preformed
>on the Switch, the only one that can accomplish this is the sysop... The
>manager has the correct password, but, when issued, the switch does nothing..
>(The manager command is also turned on at the Switch...)

The MANAGER function is used in conjunction with the AUDIT parameter.
Depending on which bits are set in the value of the AUDIT parms, different
types of statistics will be sent to the station connected in MANAGER mode.
I found the documentation quite clear on this feature, but don't hesitate
to ask more questions if you need more explanation. The AUDIT value is
set to 0 at default, so there probably isn't any statistics being sent out.
The docs caution to set the AUDIT value back to 0 when you are done, as it
uses some of the CPU time.

>
>We only switched over to X1J a couple of months ago from ROSE... We don't
>understand all of the commands of the X1J yet, but we are learning...
>However, we do need more then one person to be able to preform some of
>the commands... Hope this is possible...

Absolutely possible!   Good Luck!
>
>   Jim
>   ac191@detroit.freenet.org
>   WW8Q@WW8Q.#NWMI.MI.USA.NOAM

              73s   Dave N0ITS@KB0CZV.#NWCO.CO

      email: dcbr@chevron.com

212. Attention Dave Roberts!

From: "Gary McDuffie, Sr." <mcduffie@hannibal.wncc.cc.ne.us>
Date: Wed, 27 Jul 1994 20:24:24 -0600 (MDT)
To: netsig@tcet.unt.edu
Message-ID: <Pine.3.89.9407272001.A6321-0100000@hannibal>
Rendered body type: text/plain

Dave -

I've tried email direct to you at listed address given in your post
(roberts@ses6a.bt.co.uk) but mail bounces. Please send me your proper
address so that I may contact you direct.

Thanks and sorry to the list for this post!

Gary
(mcduffie@hannibal.wncc.cc.ne.us)

213. RE: Getting back on track

From: jra1854@tntech.edu (Jeffrey Austen)
Date: Thu, 28 Jul 1994 08:54:10 -0600
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <01HF8FPJ8JXE9I44TD@tntech.edu>
Rendered body type: text/plain

> From: wb9mjn@uugate.wa7slg.ampr.org
> In building networks we need to strive for the best Baud/HZ-Second at a
> economic level of reliability. Oops, change that Baud to Bits.

Not at all. Bits per second-Hertz is a measure of bandwidth efficiency. I
don't think that we have a problem with available bandwidth, except on 144
MHz and in some areas 222 and 420 MHz.

Our most severe constraints are money and time -- that's why we need cheap
off-the-shelf digital radios before we will accomplish much.

Jeff, k9ja

+-+
Jeffrey Austen | Tennessee Technological University
jra1854@tntech.edu | Box 5004
(615) 372-3485 | Cookeville Tennessee 38505   U.S.A.

214. Re:(2) Getting Back on Track

From: tmoulton@ram.net
Date: Thu, 28 Jul 94 09:53:13 EDT
To: netsig@tcet.unt.edu
Message-ID: <05184.15021573@RAMail>
Rendered body type: text/plain

>> From: ssampson@sabea-oc.af.mil (Steve Sampson)
>> Subject: Re: Getting Back on Track
>> To: netsig@tcet.unt.edu
>> Date: Wed, 27 Jul 1994 11:45:26 -0500 (CDT)

stuff deleted

>>   What I know doesn't work well, is half-duplex AX.25. So
anything
>> developed on the AX.25 layer will be stillborn without limiting the design
in
>> ways to offset the disadvantages of being half-duplex. What will be the
layer

You are the one placing the limitation of HDX. ROSE Does FDX just fine
and Yes it *Does* transmit and receive at the same time.

>> that IP and/or Rose will sit above to interface with RF? I really don't
need
>> AX.25, and I've even done plain old SLIP over the air.

If you want to talk to your neighbor then SLIP on the air is fine, but
the reality is that users of different upper layer protocols are in
different RF domains so that some common link or network layer. For IP
ROSE is only the lower half of the network layer.

If you engineer a solution for IP then nobody else will use it, if a
solution exists that can support everyone's needs maybe it's a good
starting point.

The level 1 problems you mention can be fixed pretty easily, one
suggestion Phil made once was to have a transmitter and three receivers
at each site, no contention and if TXDelay bothered you then just leave
the transmitters on all the time.

If that won't do, then What frame size should the "best" system support?
1K, 2K, 10K? We will still get inefficent when we aren't doing file
transfers. Correct me if I am wrong, but NOS is used for a lot more then
FTP.

tom, w2vy

215. RE : Getting Back on Track

From: roberts@ses6a.bt.co.uk
Date: Thu, 28 Jul 1994 14:50:17 +0100
To: netsig@tcet.unt.edu
Message-ID: <9407281407.AA144503@tcet.unt.edu>
Rendered body type: text/plain

>From: NAME: Dave Roberts
       FUNC: DTI14
       TEL: 0473 224566   <ROBERTS AT A1 AT SES6A>
To: "netsig@tcet.unt.edu" @ R11F @ MRGATE

In a previous message :

>> From: ssampson@sabea-oc.af.mil (Steve Sampson)
>> Subject: Re: Getting Back on Track
>> To: netsig@tcet.unt.edu
>> Date: Wed, 27 Jul 1994 11:45:26 -0500 (CDT)

>> tmoulton@ram.net says:
>> > Let us understand what ROSE, NetROM and TCP/IP really are.

>> I think you can assume the readership of the SIG is aware of what the
>> protocols are. Your comments come at a time when there was a great
>> discussion about networking infrastructure. The arguments have been:

>> 1.   Pro Net/Rom   (Proprietary Protocol - No Source, Closed Development)

I am in danger of being seen as fuelling the 'religious wars' aspect,
which I hope I am not. The only thing that stops people developing
this is that it is a bit of a dog to do (you can't just use your
copy of turbo-C under DOS and debug it under a DOS debugger).
There are many copies of the X-1 source floating around - anyone who
has asked has had a copy (currently US, Germany, UK, Australia).
I've never felt happy enough about the support for building it to
put it on the network.

>> 2.   Pro Rose   (Proprietary Protocol - No Source, Closed Development)
>> 3.   Pro TCP/IP   (Open Protocol - Source, Development Complete)
>> 4.   Something New (Open Protocol - Source, Design and Testing Stage)
>> 5.   No Change   (No Higher Protocol - AX.25 Only, Development Complete)

>> << REST DELETED >>

I totally agree with the comments made about 'back to basics'. At
work, we deal with FR and ATM (plus a few 'futures' things as well -
ATM and FR are today's technology).
IP is just the internetworking bit on top coz the applications tend
to exist for it. There is nothing sacred about IP either. That would
get dumped as well if there was something bundled with the apps that
talked direct to a PC ATM card. How about trying to build an amateur
IN system based on C7 signalling that could pass voice as well :-)

Why not ?

Anyone want a version of X-1 with a raw IP interface to bypass the
AX.25 layer ?. Draw up a spec of exactly what you want. Still only
a here and now but might be fun to play with. Need to be able to
distinuish it from AX.25 somehow to enable such frames to be
recognised and bypass the AX.25. How do you want it done ? Just
a thought.

Dave
G8KBB

216. Re: Computer Based node

From: Anthony Olszewski <aolsz@ritz.mordor.com>
Date: Thu, 28 Jul 1994 13:33:08 -0400 (EDT)
To: netsig@tcet.unt.edu
Message-ID: <199407281733.NAA18345@ritz.mordor.com>
Rendered body type: text/plain

>
> From: dreamer@lhaven.UUmh.Ab.Ca (Lawrence *The Dreamer* Chen)
> Subject: Re: Computer Based node
> To: netsig@tcet.unt.edu
> Date: Tue, 26 Jul 1994 11:25:52 -0400
>
> Hi TAPR (TAPR Network Special Interest Group), in <9407181529.AA162006@tcet.unt.edu> on Jul 18 you
wrote:
>
> >
> > Using PC's in remote locations is are becoming much more fesilble with the cost
> > drop over the last few years and the fact that you can run most of the newer
> > boards from a regular +12/+5 supply...thus you don't have problems with the
> > powersupply that are typically provided for home use...which have problems
> > again in uncontrolled temperature situations.
> >
> Speaking of PC's in remote locations, has anybody converted a PC to run off of
> a 12V DC only system? (without resorting to an inverter). In the interest of

> cost and availability....we might only have a 12V DC system at a remote
> location, which is fine for the radio equipment....
>
> --
> "Just a Crazy Engineer with an Amiga and an HP48sx"   - The Dreamer
> Email: dreamer@lhaven.uumh.ab.ca or "Lawrence Chen" @ 1:134/3002
> PHONE: +1 403 526 6019   FAX: +1 403 529 5102   CIS: 74200,2431
> Praxis Society K12 BBS: +1 403 529 1610 Lunatic Haven: +1 403 526 6957
> CYSNET Packet BBS: +1 403 526 4304 LHaven Dialup: +1 403 526 5035
> Packet: VE6LKC @ VE6PAQ.AB.CAN.NOAM
>
>
>
I believe the book THE OCEAN-GOING COMPUTER covers this. Reviews a
number of marine PCs. BIG $$$$ if I remember correctly.

217. Re: RE : Getting Back on Track

From: Glenn Elmore <glenne@eagle.sr.hp.com>
Date: Thu, 28 Jul 1994 11:32:47 -0800 (PDT)
To: netsig@tcet.unt.edu
Message-ID: <9407281832.AA28780@eagle.sr.hp.com>
Rendered body type: text/plain

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> AX.25 layer ?. Draw up a spec of exactly what you want. Still only
> a here and now but might be fun to play with. Need to be able to
> distinuish it from AX.25 somehow to enable such frames to be
> recognised and bypass the AX.25. How do you want it done ? Just
> a thought.

Dave,
  I greatly appreciate your past contributions and your present willingness to help do whatever you can to make things better. However, it seems to me that for amateur networking (the big picture) L2 and greater protocol issues are really not the limiting factor at the moment, at least until we get to applications layer. I know that it is "fun" to discuss the relative advantages and disadvantages of existing methods but don't they pale in comparison with the potential increased capability to be gained by fixing layer 1? I guess I'm really addressing previous posters on this thread more than you here.

  Here in northern California we are currently running IP over AX.25 (JNOS) on the 230.4 kbps hardware. On file transfer or other large quantity information processes (there aren't many others that we're using yet but perhaps we'll do some framegrabbing for rapid update image transfer demos just for fun) we are seeing transfers on the order of 2/3 the raw channel capacity. At lower speeds, 56kbps and below, we see slightly better than 80%. This is with AX.25 UI frames and generally with 1K packet sizes.

  Prior to running the PI cards we are now using, we used X1J with 10 MHz TNCs which got us to simultaneous 38.4 kbps on radio and host sides (as you know because you helped us get things going). I ran these in simple AX.25, NET/ROM (briefly) and IP modes with no great difference in performance. The per-character interrupt and cpu limitations were what held things back, not the protocols, as far as I can tell.

  It sure seems to me that this stuff works (or doesn't) based on available *user* raw channel capacity far more than on which higher layer protocol is being used. Isn't this at least the first place we need to focus our attention?

  OTOH, I am keenly aware that it is *applications* which fund network development (except for a small set of crazies who do it for fun) and the information capacity provided by our networks must result in something useful being accomplished. I have to confess to increasingly asking the question "Now that it runs, what do we do with it?".

  Due to the fundamental nature of radio, there *are* some consequences to protocols at L2 and greater if we are to make L1 work well.

  I really don't care which particular L2-6 protocols we use but I do care that we find a way to achieve meaningful/useful networking capabilities and services so that amateur radio stands a chance of becoming relevant in the information age and continues to exist. We probably have to simultaneously "fund" L1 with L7 applications.

  Doesn't it make sense for us to look at what we must do to have success at L1 before we decide on what should/shouldn't be done at L2-3

and above?

  I guess by now everyone will be tired of hearing me repeat the same
song so I'll stop.

Glenn n6gn

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Date: Thu, 28 Jul 1994 13:33:08 -0400 (EDT)
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>
>
>
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219. Re: RE : Getting Back on Track

From: Glenn Elmore <glenne@eagle.sr.hp.com>
Date: Thu, 28 Jul 1994 11:32:47 -0800 (PDT)
To: netsig@tcet.unt.edu
Message-ID: <9407281832.AA28780@eagle.sr.hp.com>
Rendered body type: text/plain

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> recognised and bypass the AX.25. How do you want it done ? Just
> a thought.

Dave,
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willingness to help do whatever you can to make things better. However,
it seems to me that for amateur networking (the big picture) L2 and
greater protocol issues are really not the limiting factor at the
moment, at least until we get to applications layer. I know that it is
"fun" to discuss the relative advantages and disadvantages of existing
methods but don't they pale in comparison with the potential increased
capability to be gained by fixing layer 1? I guess I'm really
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something useful being accomplished. I have to confess to increasingly
asking the question "Now that it runs, what do we do with it?".

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becoming relevant in the information age and continues to exist. We
probably have to simultaneously "fund" L1 with L7 applications.

  Doesn't it make sense for us to look at what we must do to have
success at L1 before we decide on what should/shouldn't be done at L2-3
and above?

  I guess by now everyone will be tired of hearing me repeat the same
song so I'll stop.

Glenn n6gn

220. Getting back on track (a new question)

From: roberts@ses6a.bt.co.uk
Date: Fri, 29 Jul 1994 11:28:24 +0100
To: netsig@tcet.unt.edu
Message-ID: <9407291120.AA187865@tcet.unt.edu>
Rendered body type: text/plain

>From: NAME: Dave Roberts
        FUNC: DTI14
        TEL: 0473 224566   <ROBERTS AT A1 AT SES6A>
To: "netsig@tcet.unt.edu" @ R11F @ MRGATE

Glen writes :

>> From: Glenn Elmore <glenne@eagle.sr.hp.com>
>> Subject: Re: RE : Getting Back on Track
>> To: netsig@tcet.unt.edu
>> Date: Thu, 28 Jul 1994 11:32:47 -0800 (PDT)

>> << text deleted >>

>> Dave,
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>> willingness to help do whatever you can to make things better. However,
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>> greater protocol issues are really not the limiting factor at the
>> moment, at least until we get to applications layer. I know that it is
>> "fun" to discuss the relative advantages and disadvantages of existing
>> methods but don't they pale in comparison with the potential increased
>> capability to be gained by fixing layer 1? I guess I'm really
>> addressing previous posters on this thread more than you here.

>> <<rest deleted>>

My apologies for bundling two things in one. The raw IP one was a
sideline.

The more significant question is over the nature of the type of system
we are trying to build. I agree about L1. What I wanted to point out

was that the world's telecomms systems are rushing towards IN systems
which, as managed bit carrier networks, will happily pump all sorts
of stuff over them. It distresses me to see us stuck with preconceptions,
so I wanted to challenge one of them.

The question I pose - should we look at building a C7 like managed
network - for which we need solutions at L1 and all the other levels.
Maybe C7 is not what we need - but we need to be clear on our network
objectives or we will be linked into incrementalism.

So, the strawman to be shot down (and I'm not going to say whether
I personally think it is right - I pose the question).

Telecomms is going IN. It aims to provide a managed network on which
services may be created. It cares not whether you put IP, voice,
the latest Bill Gates multimedia proprietary or whatever over it.
Should the amateur community strive for such a network (for which we
will need very fast, high reliability links)?. Bear in mind that we
will be starting from scratch in many aspects of our networks.

Dave
G8KBB

P.S. We all arrive with certain history and ideas. If the answer to
this is "such and such a current system / protocol / widget / net
already does this" then I'll unsubscribe and leave you all in peace.
There are very few true IN systems in existance and none of our
components actually has the richness of emerging professional INs.
Leave the baggage of history. If we are going to think big, then
think *BIG*.

221. Re: What's an X-1 to do

From: ssampson@sabea-oc.af.mil (Steve Sampson)
Date: Fri, 29 Jul 1994 08:20:08 -0500 (CDT)
To: netsig@tcet.unt.edu
Message-ID: <9407291320.AA01797@sabea-oc.af.mil>
Rendered body type: text/plain

Dave says:
> Anyone want a version of X-1 with a raw IP interface to bypass the
> AX.25 layer ?

What I would like to see in the interim is an X-1 that has no Net/Rom and
outputs SLIP out the serial port (remove the AX.25 encapsulation). I'm not
ready for high speed yet anyway and 9600 IP needs some hardware help. That
way a person could hook up X-1's to Unix boxes (Linux, NetBSD, etc) and
not keep re-inventing NOS. Then Hank can port his stuff as an application
layer for Unix which uses both UUCP and TCP. Let me know if I can help,
as I'd love to make this [X-1] happen.
--
Steve, N5OWK

222. Re: RE : Getting Back on Track

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Fri, 29 Jul 1994 08:07:33 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9407290738.B26332-0100000@kazak>
Rendered body type: text/plain

On Fri, 29 Jul 1994, TAPR Network Special Interest Group wrote:

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> Subject: Re: RE : Getting Back on Track
> To: netsig@tcet.unt.edu
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        Tons of good stuff deleted...

>
>   Doesn't it make sense for us to look at what we must do to have
> success at L1 before we decide on what should/shouldn't be done at L2-3
> and above?
>
>   I guess by now everyone will be tired of hearing me repeat the same
> song so I'll stop.
>
> Glenn n6gn

        Keep singing this song Glen. This is the net sig and should

abound with sweaty guys hanging off towers on hills trying to make the
dam L1 link work. I believe the software to do what we need is available
and we are using it now. What is not available is people like you Glenn
that have put up a system and made it work; at high speed and with
reliability.

        We need more songs from you and less from people like the fine
guy doing the ROSE switch who is "now writing code that will allow...".
This is relevant but not as interesting as what you have done.

-karl
k5di

223. Getting back on track (a new question)

From: roberts@ses6a.bt.co.uk
Date: Fri, 29 Jul 1994 11:28:24 +0100
To: netsig@tcet.unt.edu
Message-ID: <9407291120.AA187865@tcet.unt.edu>
Rendered body type: text/plain

>From: NAME: Dave Roberts
        FUNC: DTI14
        TEL: 0473 224566   <ROBERTS AT A1 AT SES6A>
To: "netsig@tcet.unt.edu" @ R11F @ MRGATE

Glen writes :

>> From: Glenn Elmore <glenne@eagle.sr.hp.com>
>> Subject: Re: RE : Getting Back on Track
>> To: netsig@tcet.unt.edu
>> Date: Thu, 28 Jul 1994 11:32:47 -0800 (PDT)

>> << text deleted >>

>> Dave,
>>   I greatly appreciate your past contributions and your present
>> willingness to help do whatever you can to make things better. However,
>> it seems to me that for amateur networking (the big picture) L2 and
>> greater protocol issues are really not the limiting factor at the
>> moment, at least until we get to applications layer. I know that it is
>> "fun" to discuss the relative advantages and disadvantages of existing
>> methods but don't they pale in comparison with the potential increased
>> capability to be gained by fixing layer 1? I guess I'm really
>> addressing previous posters on this thread more than you here.

>> <<rest deleted>>

My apologies for bundling two things in one. The raw IP one was a
sideline.

The more significant question is over the nature of the type of system
we are trying to build. I agree about L1. What I wanted to point out
was that the world's telecomms systems are rushing towards IN systems
which, as managed bit carrier networks, will happily pump all sorts
of stuff over them. It distresses me to see us stuck with preconceptions,
so I wanted to challenge one of them.

The question I pose - should we look at building a C7 like managed
network - for which we need solutions at L1 and all the other levels.
Maybe C7 is not what we need - but we need to be clear on our network
objectives or we will be linked into incrementalism.

So, the strawman to be shot down (and I'm not going to say whether
I personally think it is right - I pose the question).

Telecomms is going IN. It aims to provide a managed network on which
services may be created. It cares not whether you put IP, voice,
the latest Bill Gates multimedia proprietary or whatever over it.
Should the amateur community strive for such a network (for which we
will need very fast, high reliability links)?. Bear in mind that we
will be starting from scratch in many aspects of our networks.

Dave
G8KBB

P.S. We all arrive with certain history and ideas. If the answer to
this is "such and such a current system / protocol / widget / net
already does this" then I'll unsubscribe and leave you all in peace.

There are very few true IN systems in existance and none of our components actually has the richness of emerging professional INs. Leave the baggage of history. If we are going to think big, then think *BIG*.

224. Re: What's an X-1 to do

From: ssampson@sabea-oc.af.mil (Steve Sampson)
Date: Fri, 29 Jul 1994 08:20:08 -0500 (CDT)
To: netsig@tcet.unt.edu
Message-ID: <9407291320.AA01797@sabea-oc.af.mil>
Rendered body type: text/plain

Dave says:
> Anyone want a version of X-1 with a raw IP interface to bypass the
> AX.25 layer ?

What I would like to see in the interim is an X-1 that has no Net/Rom and outputs SLIP out the serial port (remove the AX.25 encapsulation). I'm not ready for high speed yet anyway and 9600 IP needs some hardware help. That way a person could hook up X-1's to Unix boxes (Linux, NetBSD, etc) and not keep re-inventing NOS. Then Hank can port his stuff as an application layer for Unix which uses both UUCP and TCP. Let me know if I can help, as I'd love to make this [X-1] happen.
--
Steve, N5OWK

225. Re: RE : Getting Back on Track

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Fri, 29 Jul 1994 08:07:33 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9407290738.B26332-0100000@kazak>
Rendered body type: text/plain

On Fri, 29 Jul 1994, TAPR Network Special Interest Group wrote:

> From: Glenn Elmore <glenne@eagle.sr.hp.com>
> Subject: Re: RE : Getting Back on Track
> To: netsig@tcet.unt.edu
> Date: Thu, 28 Jul 1994 11:32:47 -0800 (PDT)

Tons of good stuff deleted...

>
> Doesn't it make sense for us to look at what we must do to have
> success at L1 before we decide on what should/shouldn't be done at L2-3
> and above?
>
> I guess by now everyone will be tired of hearing me repeat the same
> song so I'll stop.
>
> Glenn n6gn

Keep singing this song Glen. This is the net sig and should abound with sweaty guys hanging off towers on hills trying to make the dam L1 link work. I believe the software to do what we need is available and we are using it now. What is not available is people like you Glenn that have put up a system and made it work; at high speed and with reliability.

We need more songs from you and less from people like the fine guy doing the ROSE switch who is "now writing code that will allow...". This is relevant but not as interesting as what you have done.

-karl
k5di

226. Re: Low speed, Full Duplex

From: ssampson@sabea-oc.af.mil (Steve Sampson)
Date: Fri, 29 Jul 94 10:26:34 CDT
To: netsig
Message-ID: <9407291526.AA101462@tcet.unt.edu>
Rendered body type: text/plain

When I first bought a TNC I thought it was neat to do over radio what was normally done over the telephone. To tell the truth the 1200 baud rate wasn't that many years ago over telco, and it supported a huge Usenet community. I remember when some of the colleges were talking about going to 2400 baud. The Ham TNC

wasn't really mean't to be anything other than a gadget for Hams to chat with and maybe hook two computers up (like over a telephone) in the same city. The packet part of the protocol was theoretically neat-O but practically zip-O. The problem has always been that the modems are only as smart as the users. When Jim-Bob and Mary-Lou plug that sucker into the computer and radio, normally they don't care what the deviation is, or what the timing is set to. Usually they will go with radical settings: 255 Persist, 0 Slot, FRACK 1, and 25 kHz deviation. So with users like this, who needs a Network? I think that AEA, Kantronics, and DRSI could do us a big favor by fixing these values and NOT letting amateurs adjust them. A 1200 TNC should come fixed, and higher speeds should unlock their adjustment :-)

So with that background I find that I am open to solutions that combine radio with wire-line. I don't go to confession when I see a repeater tied to a phone line, nor do I go to confession when I see a computer tied to a radio and a phone line. As a Ham, I see radio as a practical emergency network solution for the country, and as a nerd I see a technical challenge that can combine my computer interests with my electronic interests.

Tom mentioned that it was I who limits AX.25 to half-duplex. Well I confess that I only think of AX.25 in those terms, as I haven't seen much full-duplex activity. I did buy a dual band radio for 1200 baud so that I am capable of full-duplex, but everyone around here is wedded to 145.01. As a matter of fact the Hams 100 miles south use beams which rival EME to monitor everything we do and see what the big city boys are up to :-) I think 145.01 is a mental disease that rivals voyeurism and any network that doesn't include a way for everything that is being said in one town to be monitored in another town, won't gratify their needs. Not just a chat node, an algorithm that sucks in everything on a frequency to another town. The person talking can't know they are being seen, else there is no sexual gratification by the voyeurs. When I think of microwave I think of full-duplex, but usually at 1200 I think of half-duplex, and this is why I think DAMA or MACA is needed to solve the "Jim-Bob and Mary-Lou syndrome" for those who don't buy dual-band radios for packet. Net/Rom and the other network solutions using the TAPR TNC base have always been full-duplex capable at 1200. But I don't expect either Net/Rom or Rose, or IP to stand up to higher speeds on a Z-80 64k memory based processor. There's not enough RAM to sustain more than 1 or 2 circuits. Can you imagine a Rose or Net/Rom handling 20 File Transfer circuits at 19.2 kbps? I guess it could if the packets were made small enough but packet size vs through-put isn't defined yet. My personal feeling is that the curve will favor larger packet sizes on such a graph.

--
Steve, N5OWK

227. Re: Half-Duplex and Rose

From: ssampson@sabea-oc.af.mil (Steve Sampson)
Date: Fri, 29 Jul 1994 10:46:12 -0500 (CDT)
To: netsig@tcet.unt.edu
Message-ID: <9407291546.AA04469@sabea-oc.af.mil>
Rendered body type: text/plain

I just remembered something I thought of a couple of months ago.

One of the network solutions locally has been a 1200/9600 Rose circuit to Texas. Actually Larry (WB5CQU) set this up so he could link with his brother, and we [Okies] are just free-loading... But the 1200 users are theoretically transported via the 9600 backbone.

It doesn't really work very well because of some known limitations: the distance between nodes is too great, and the 9600 is on the same frequency all the way up and down and across (thus hidden nodes affect performance as the antennas are dual-band Comets or Diamonds). I sat and monitored these things for an hour, when I came to the conclusion that these nodes are beating themselves to death doing absolutely nothing. At 3 AM they were ACKing each other every minute on both frequencies. I guess you could back off the timing some but that's another story. A better idea may be to go pseudo-full-duplex. That is, when a packet is sent over the 9600 network, the 1200 network

side will ACK it, and vice-versa. That way it doesn't have to
wait 3 minutes to re-sync and recover from the stop and go of
one packet at a time window.

I think a better solution is to change frequencies over the
length of a circuit but this increases the cost. I like the
little TEKK radios, and for 1200/9600 I picture the node having
two of these at 9600 using beams, along with an Omni and a 1200
junk radio. I just wish that TEKK made a 10 Watt model. . .

```
          144.91             144.93
            |                  |
441.100<--[NODE]-->441.975<--[NODE]-->441.125<--[ETC
```

So for cheap VC networks, done half-duplex, maybe an ACK feature
that uses the other node can solve some of the problems that
slow these type of networks down:

```
          145.01 <---ACK---  145.01 <---ACK---  145.01
            |                  |                  |
          [W1AW-1]           [W1AW-2]           [W1AW-3]
            |                  |                  |
          441.10 ---DATA---> 441.10 ---DATA---> 441.10
```

It's a low-tech solution, but better than the stock method.

--
Steve

228. RE: RE : Getting Back on Track

From: jra1854@tntech.edu (Jeffrey Austen)
Date: Fri, 29 Jul 1994 11:45:57 -0600
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <01HFA00RRT029I4C79@tntech.edu>
Rendered body type: text/plain

>From: Glenn Elmore <glenne@eagle.sr.hp.com>
> Here in northern California we are currently running IP over AX.25
>(JNOS) on the 230.4 kbps hardware.

Glenn:

What is the status of that hardware? Is it economical? Is documentation
available? Is a PC board available? Are there plans for one?

Need anybody to beta test a few radios for you? :-)

Jeff, k9ja

+-+
Jeffrey Austen | Tennessee Technological University
jra1854@tntech.edu | Box 5004
(615) 372-3485 | Cookeville Tennessee 38505   U.S.A.

229. Re: Getting back on track (a new question)

From: Adrian Godwin <agodwin@acorn.co.uk>
Date: Fri, 29 Jul 1994 18:10:32 +0100
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <9407291710.AA24250@snark.acorn.co.uk>
Rendered body type: text/plain

> From: roberts@ses6a.bt.co.uk
>
> Telecomms is going IN. It aims to provide a managed network on which
> services may be created. It cares not whether you put IP, voice,
> the latest Bill Gates multimedia proprietary or whatever over it.
> Should the amateur community strive for such a network (for which we
> will need very fast, high reliability links)?. Bear in mind that we
> will be starting from scratch in many aspects of our networks.
>
> Dave
> G8KBB
>

This model seems to suit the commercial world fairly well, but there
are quite a lot of differences due to our different motivations and
funding. As amateurs, we want to explore our own interests in networking -
while there are many people who do just want network services, I think
that's a much lower proportion than in the commercial domain.

Many amateurs want to pursue their own ideas and learn from experiments,
whether at the physical or network level. As a result, I think that
a model that permits many locally built, locally operated networks
each tailored to the budgets and needs of that community to be stitched
together into a worldwide network is more likely to succeed.

Given that a homogeneous network providing bitpipe services to every
amateur station would require an immense, synchronised investment in
time and money (and not least, political will) I don't think it would
ever happen : by the time it was half-built, available technology would
change so much that it wouldn't make sense to finish it. So even a
plan to build a single network would end up modified into a series
of interconnected networks. You might as well start out with that
assumption.

This doesn't mean you shouldn't offer bitpipe services to the end user -
but I think you have to accept that, worldwide, it's got to be provided
by protocol converters, wormholes and gateways rather than by a
coordinated worldwide strategy.

The IP and OSI camps of a few years ago do seem to be tending toward this
view - there's a tendency for each to be able to carry the other's
traffic over their bits of network in a partially transparent manner.
However, the flame wars are fuelled by the low speeds common today - it's
hard to tolerate poor performance *for your particular type of usage*
when performance is so poor to start with. Each camp wants to be the
underlying network, so that they can use the bandwidth most efficiently.

-adrian

230. Re: Getting back on track (a new question)

From: Glenn Elmore <glenne@eagle.sr.hp.com>
Date: Fri, 29 Jul 1994 11:42:09 -0800 (PDT)
To: netsig@tcet.unt.edu
Message-ID: <9407291842.AA21082@eagle.sr.hp.com>
Rendered body type: text/plain

> My apologies for bundling two things in one. The raw IP one was a
> sideline.

No apologies required. Raw IP is an interesting thought and I understood
the context. I think all of us still working on the bigger question
are trying to ask questions of the same form; "How can *I* contribute
to the solution to the greater problem?".

> The more significant question is over the nature of the type of system
> we are trying to build. I agree about L1. What I wanted to point out
> was that the world's telecomms systems are rushing towards IN systems
> which, as managed bit carrier networks, will happily pump all sorts
> of stuff over them. It distresses me to see us stuck with preconceptions,
> so I wanted to challenge one of them.

I fully agree. This is the same point I've repeatedly tried to stress,
it's the stated motivation behind my L1 paper and all we've been
prototyping here. If AR doesn't get relevant in the information age, I
don't see a lot of hope for it. It's a great hobby and a great
playground, I'd hate to see it disappear.

> Telecomms is going IN. It aims to provide a managed network on which
> services may be created. It cares not whether you put IP, voice,
> the latest Bill Gates multimedia proprietary or whatever over it.
> Should the amateur community strive for such a network (for which we
> will need very fast, high reliability links)?. Bear in mind that we
> will be starting from scratch in many aspects of our networks.
>

  I'll not give my response at this time. After several years of
pushing uphill, I'm presently too inclined to rephrase it "*Can* the AR
community...".

Still, the question of how much we can actually bite off, under ideal
conditions and the best of coordination and cooperation is extremely
critical.
  I'm well convinced that organization is crucial to a positive
solution.

> P.S. We all arrive with certain history and ideas. If the answer to
> this is "such and such a current system / protocol / widget / net

> already does this" then I'll unsubscribe and leave you all in peace.
> There are very few true IN systems in existance and none of our
> components actually has the richness of emerging professional INs.
> Leave the baggage of history. If we are going to think big, then
> think *BIG*.

 I agree that there is a necessary minimum. Whether AR can identify it
and rise to this is the question. We have to think big enough,
accurately assess resources and motivations and then, I suspect,
cooperate better than hams ever have before. I hope we can do it.

 73
 Glenn n6gn

231. Re: What's an X-1 to do

From: dkelly@nebula.tbe.com (david kelly)
Date: Fri, 29 Jul 94 14:23:47 -0500
To: netsig@tcet.unt.edu
Message-ID: <9407291923.AA13809@nebula.tbe.com>
Rendered body type: text/plain

Steve quotes Dave (not me):
> Dave says:
> > Anyone want a version of X-1 with a raw IP interface to bypass the
> > AX.25 layer ?
>
> What I would like to see in the interim is an X-1 that has no Net/Rom and
> outputs SLIP out the serial port (remove the AX.25 encapsulation). I'm not
> ready for high speed yet anyway and 9600 IP needs some hardware help. That
> way a person could hook up X-1's to Unix boxes (Linux, NetBSD, etc) and
> not keep re-inventing NOS. Then Hank can port his stuff as an application
> layer for Unix which uses both UUCP and TCP. Let me know if I can help,
> as I'd love to make this [X-1] happen.
> --
> Steve, N5OWK

Yes, yes, yes! An IP-TNC suggestion surfacing again!

I too would like this kind of EPROM for a TNC-2. Once Upon A Time I spent
some time looking for a good (but cheap) C compiler for a Z80 with the intent
of creating this animal myself. One would think there was a version of gcc
for the Z80, but I didn't find it, and I'm not interested in Z80 assy.

There was quite a thread a month or two ago on the jnos netgroup Re: IP-TNC.
I would like to volunteer to help, but for the next 6 months or so all I can
offer is moral support.

73, David Kelly, N4HHE
dkelly@nebula.tbe.com (bulk mail address)
david_kelly@pobox.tbe.com (QuickMail)

232. Re: Getting back on track.

From: wb9mjn@uugate.wa7slg.ampr.org
Date: Fri, 29 Jul 94 23:14:30 mdt
To: netsig@tcet.unt.edu
Message-ID: <1569@uugate.wa7slg.ampr.org>
Rendered body type: text/plain

Hi Hank. Well, I think we better agree to disagree. It seems our observations
of what is practically working on Ham Radio have be as far out of phase as
any two observations can get.

 Yea, people can make NETROM s work. I ve done it. But I can t make a
world of NETROM s work , and neither can anybody else. It just wasn t designed
for that. And anybody who tries is just wasting their time. There is no
concept of "routing horizon" in NETROM. Without this, its impractical to
build a large network with NETROM. Or too hook two networks together, and
be able to NETROM from any node to any other, when the networks exceed some
finite size.

 I m not quite sure what u called "nonsense". I originally read it as
TCPIP working directly between users, as nonsense. But, maybe u meant
that NETROM not being able to do the same things, as nonsense. As for
TCPIP , well, that s how im typing this to u now. And how much of the
Chicago area Ham network gets its IP user packets around.

 So, in my experience, Ham Radio TCPIP works just fine. And NETROM does
too, within its "quality controlled" routing range. Its just that with

TCPIP i can telnet to Utah (like i am now ;-)), and with NETROM i
can go about 5 or 6 hops reliably, even when the links are wire lined,
as with our Wormholes to Simi Valley, and St Louis. And, both these
systems are using the same layer one assets. If we had users trying to
do NETROM networking right to their computers, the nodes tables even in
our robust P10 switches would have troubles storing all the routes. With
IP, and block addressing, all the network level users are routed. And
while it may seem that NETROM can do the peer-to-peer job, its practic-
callities in that enviorment make achieving a large working peer-to-peer
network impossible.

NETROM ain t bad, its just not worth any more effort, here, at least. Our
networks have to support the user as a networker. And there are just too
many Ham Radio packet users in the world, for NETROM to work on a practical
sized computer. NETROM is nice for the newcommer to find his way around
a network. And get used to things. Its nice for out-of-towners to figure
out the network setup (unless ur in the NYC area). Its nice for what it
is. But its not a possible peer-to-peer networking layer between the large
ON-AIR, AIR and WIRE linked ham packet user community.

73, Don. WB9MJN.

233. RE: Getting back on track

From: wb9mjn@uugate.wa7slg.ampr.org
Date: Fri, 29 Jul 94 23:49:52 mdt
To: netsig@tcet.unt.edu
Message-ID: <1575@uugate.wa7slg.ampr.org>
Rendered body type: text/plain

Hi Jeff. What was trying to say in that paragraph, is that if we build a
link system, that that link system needs to have as much capacity for
the spectrum it occupies. Including the switch process times, and data
caring capacity of the spectrum occupied. If we build a network link with
a KISS TNC PC running CSMA on a CSMA channel, the thruput available is
is just not anywhere what it could be. And, yet, we ve spent allot of time,
mostly, since the money hams spend on this stuff is peanuts, to acheive
something that s obsolete when it was built. It will never function well
enuf to not have to be rebuilt.

As far as a "cheap
" and "off-the-shelf" digital radio, i think those two items are oxymor-
ons. It can't be cheap, as i believe u define that word, and yet have
somebody spending their livelyhood to make it "off-the-shelf". Beyond
the cost of the unit, there are costs associated with makeing something
"off-the-shelf" that hams are just not willing to pay. For some reason,
they see these costs as a rip-off, rather than as the going rate for
a reliable vender. Where people have suceeded in this, is where the
market has been skewed. The D4-10 is basically a user access radio, but
probably half of them are used for links that waste spectrum, and air
time. Here, two markets are combined into one for the sake of quantity,
of production minimuns, at the absolute retadation of one of the markets
quality issues. So, it can be "cheap", and hard to get one when u want
one, or it can be "off-the-shelf" and expensive. In the radio market,
there are issues involved that make the radio even more expensive than
things like TNCs, above the cost of manufacture. The radios have to be
FCC certified, to be "off-the-shelf". This, and developement require test
equipment costing much more than the that for TNC type engineering. With
the qauntities involved, this equipment willbe hard to pay for. Probably
the only way to get "off-the-shelf" data radios for linking is to buy them
surplus from the T1 link systems going off the air, and organise a re-
building company. This way, developement is like 90 percent paid for. But,
now we are talking capital to buy lots of these radios up front, to make
doing mods worth while. Doing one at a time results in the "prototype"
cost levels, we ve discussed on here in regards to the CELLNET radios.
This is not a simple problem. And, there are people out there that may
be able to bypass some of these problems. DF9IC's group for example. But
their designs are only available as kits, at this time.

73, Don.

234. Re: Half-Duplex and Rose

From: ssampson@sabea-oc.af.mil (Steve Sampson)
Date: Fri, 29 Jul 1994 10:46:12 -0500 (CDT)
To: netsig@tcet.unt.edu
Message-ID: <9407291546.AA04469@sabea-oc.af.mil>
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I just remembered something I thought of a couple of months ago.

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could link with his brother, and we [Okies] are just
free-loading... But the 1200 users are theoretically transported
via the 9600 backbone.

It doesn't really work very well because of some known
limitations: the distance between nodes is too great, and the
9600 is on the same frequency all the way up and down and across
(thus hidden nodes affect performance as the antennas are
dual-band Comets or Diamonds). I sat and monitored these things
for an hour, when I came to the conclusion that these nodes are
beating themselves to death doing absolutely nothing. At 3 AM
they were ACKing each other every minute on both frequencies. I
guess you could back off the timing some but that's another
story. A better idea may be to go pseudo-full-duplex. That is,
when a packet is sent over the 9600 network, the 1200 network
side will ACK it, and vice-versa. That way it doesn't have to
wait 3 minutes to re-sync and recover from the stop and go of
one packet at a time window.

I think a better solution is to change frequencies over the
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little TEKK radios, and for 1200/9600 I picture the node having
two of these at 9600 using beams, along with an Omni and a 1200
junk radio. I just wish that TEKK made a 10 Watt model. . .

```
          144.91             144.93
            |                  |
441.100<--[NODE]-->441.975<--[NODE]-->441.125<--[ETC
```

So for cheap VC networks, done half-duplex, maybe an ACK feature
that uses the other node can solve some of the problems that
slow these type of networks down:

```
          145.01 <---ACK---  145.01 <---ACK---  145.01
            |                  |                  |
          [W1AW-1]           [W1AW-2]           [W1AW-3]
            |                  |                  |
          441.10 ---DATA---> 441.10 ---DATA---> 441.10
```

It's a low-tech solution, but better than the stock method.

--
Steve

235. RE: RE : Getting Back on Track

From: jra1854@tntech.edu (Jeffrey Austen)
Date: Fri, 29 Jul 1994 11:45:57 -0600
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <01HFA00RRT029I4C79@tntech.edu>
Rendered body type: text/plain

>From: Glenn Elmore <glenne@eagle.sr.hp.com>
> Here in northern California we are currently running IP over AX.25
>(JNOS) on the 230.4 kbps hardware.

Glenn:

What is the status of that hardware? Is it economical? Is documentation
available? Is a PC board available? Are there plans for one?

Need anybody to beta test a few radios for you? :-)

Jeff, k9ja

```
+-+
Jeffrey Austen       |  Tennessee Technological University
jra1854@tntech.edu   |  Box 5004
(615) 372-3485       |  Cookeville Tennessee 38505   U.S.A.
```

236. Re: Getting back on track (a new question)

From: Adrian Godwin <agodwin@acorn.co.uk>
Date: Fri, 29 Jul 1994 18:10:32 +0100
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <9407291710.AA24250@snark.acorn.co.uk>
Rendered body type: text/plain

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> the latest Bill Gates multimedia proprietary or whatever over it.
> Should the amateur community strive for such a network (for which we
> will need very fast, high reliability links)?. Bear in mind that we
> will be starting from scratch in many aspects of our networks.
>
> Dave
> G8KBB
>

This model seems to suit the commercial world fairly well, but there
are quite a lot of differences due to our different motivations and
funding. As amateurs, we want to explore our own interests in networking -
while there are many people who do just want network services, I think
that's a much lower proportion than in the commercial domain.

Many amateurs want to pursue their own ideas and learn from experiments,
whether at the physical or network level. As a result, I think that
a model that permits many locally built, locally operated networks
each tailored to the budgets and needs of that community to be stitched
together into a worldwide network is more likely to succeed.

Given that a homogeneous network providing bitpipe services to every
amateur station would require an immense, synchronised investment in
time and money (and not least, political will) I don't think it would
ever happen : by the time it was half-built, available technology would
change so much that it wouldn't make sense to finish it. So even a
plan to build a single network would end up modified into a series
of interconnected networks. You might as well start out with that
assumption.

This doesn't mean you shouldn't offer bitpipe services to the end user -
but I think you have to accept that, worldwide, it's got to be provided
by protocol converters, wormholes and gateways rather than by a
coordinated worldwide strategy.

The IP and OSI camps of a few years ago do seem to be tending toward this
view - there's a tendency for each to be able to carry the other's
traffic over their bits of network in a partially transparent manner.
However, the flame wars are fuelled by the low speeds common today - it's
hard to tolerate poor performance *for your particular type of usage*
when performance is so poor to start with. Each camp wants to be the
underlying network, so that they can use the bandwidth most efficiently.

-adrian

237. Re: Getting back on track (a new question)

From: Glenn Elmore <glenne@eagle.sr.hp.com>
Date: Fri, 29 Jul 1994 11:42:09 -0800 (PDT)
To: netsig@tcet.unt.edu
Message-ID: <9407291842.AA21082@eagle.sr.hp.com>
Rendered body type: text/plain

> My apologies for bundling two things in one. The raw IP one was a
> sideline.

No apologies required. Raw IP is an interesting thought and I understood
the context. I think all of us still working on the bigger question
are trying to ask questions of the same form; "How can *I* contribute
to the solution to the greater problem?".

> The more significant question is over the nature of the type of system
> we are trying to build. I agree about L1. What I wanted to point out
> was that the world's telecomms systems are rushing towards IN systems
> which, as managed bit carrier networks, will happily pump all sorts
> of stuff over them. It distresses me to see us stuck with preconceptions,
> so I wanted to challenge one of them.

I fully agree. This is the same point I've repeatedly tried to stress,
it's the stated motivation behind my L1 paper and all we've been
prototyping here. If AR doesn't get relevant in the information age, I
don't see a lot of hope for it. It's a great hobby and a great
playground, I'd hate to see it disappear.

> Telecomms is going IN. It aims to provide a managed network on which
> services may be created. It cares not whether you put IP, voice,

> the latest Bill Gates multimedia proprietary or whatever over it.
> Should the amateur community strive for such a network (for which we
> will need very fast, high reliability links)?. Bear in mind that we
> will be starting from scratch in many aspects of our networks.
>

  I'll not give my response at this time. After several years of
pushing uphill, I'm presently too inclined to rephrase it "*Can* the AR
community...".

Still, the question of how much we can actually bite off, under ideal
conditions and the best of coordination and cooperation is extremely
critical.
  I'm well convinced that organization is crucial to a positive
solution.

> P.S. We all arrive with certain history and ideas. If the answer to
> this is "such and such a current system / protocol / widget / net
> already does this" then I'll unsubscribe and leave you all in peace.
> There are very few true IN systems in existance and none of our
> components actually has the richness of emerging professional INs.
> Leave the baggage of history. If we are going to think big, then
> think *BIG*.

 I agree that there is a necessary minimum. Whether AR can identify it
and rise to this is the question. We have to think big enough,
accurately assess resources and motivations and then, I suspect,
cooperate better than hams ever have before. I hope we can do it.

 73
 Glenn n6gn

238. Re: What's an X-1 to do

From: dkelly@nebula.tbe.com (david kelly)
Date: Fri, 29 Jul 94 14:23:47 -0500
To: netsig@tcet.unt.edu
Message-ID: <9407291923.AA13809@nebula.tbe.com>
Rendered body type: text/plain

Steve quotes Dave (not me):
> Dave says:
> > Anyone want a version of X-1 with a raw IP interface to bypass the
> > AX.25 layer ?
>
> What I would like to see in the interim is an X-1 that has no Net/Rom and
> outputs SLIP out the serial port (remove the AX.25 encapsulation). I'm not
> ready for high speed yet anyway and 9600 IP needs some hardware help. That
> way a person could hook up X-1's to Unix boxes (Linux, NetBSD, etc) and
> not keep re-inventing NOS. Then Hank can port his stuff as an application
> layer for Unix which uses both UUCP and TCP. Let me know if I can help,
> as I'd love to make this [X-1] happen.
> --
> Steve, N5OWK

Yes, yes, yes! An IP-TNC suggestion surfacing again!

I too would like this kind of EPROM for a TNC-2. Once Upon A Time I spent
some time looking for a good (but cheap) C compiler for a Z80 with the intent
of creating this animal myself. One would think there was a version of gcc
for the Z80, but I didn't find it, and I'm not interested in Z80 assy.

There was quite a thread a month or two ago on the jnos netgroup Re: IP-TNC.
I would like to volunteer to help, but for the next 6 months or so all I can
offer is moral support.

73, David Kelly, N4HHE
dkelly@nebula.tbe.com (bulk mail address)
david_kelly@pobox.tbe.com (QuickMail)

239. Re: Getting back on track.

From: wb9mjn@uugate.wa7slg.ampr.org
Date: Fri, 29 Jul 94 23:14:30 mdt
To: netsig@tcet.unt.edu
Message-ID: <1569@uugate.wa7slg.ampr.org>
Rendered body type: text/plain

Hi Hank. Well, I think we better agree to disagree. It seems our observations
of what is practically working on Ham Radio have be as far out of phase as

any two observations can get.

Yea, people can make NETROM s work. I ve done it. But I can t make a world of NETROM s work , and neither can anybody else. It just wasn t designed for that. And anybody who tries is just wasting their time. There is no concept of "routing horizon" in NETROM. Without this, its impractical to build a large network with NETROM. Or too hook two networks together, and be able to NETROM from any node to any other, when the networks exceed some finite size.

I m not quite sure what u called "nonsense". I originally read it as TCPIP working directly between users, as nonsense. But, maybe u meant that NETROM not being able to do the same things, as nonsense. As for TCPIP , well, that s how im typing this to u now. And how much of the Chicago area Ham network gets its IP user packets around.

So, in my experience, Ham Radio TCPIP works just fine. And NETROM does too, within its "quality controlled" routing range. Its just that with TCPIP i can telnet to Utah (like i am now ;-)), and with NETROM i can go about 5 or 6 hops reliably, even when the links are wire lined, as with our Wormholes to Simi Valley, and St Louis. And, both these systems are using the same layer one assets. If we had users trying to do NETROM networking right to their computers, the nodes tables even in our robust P10 switches would have troubles storing all the routes. With IP, and block addressing, all the network level users are routed. And while it may seem that NETROM can do the peer-to-peer job, its practic-callities in that enviorment make achieving a large working peer-to-peer network impossible.

NETROM ain t bad, its just not worth any more effort, here, at least. Our networks have to support the user as a networker. And there are just too many Ham Radio packet users in the world, for NETROM to work on a practical sized computer. NETROM is nice for the newcommer to find his way around a network. And get used to things. Its nice for out-of-towners to figure out the network setup (unless ur in the NYC area). Its nice for what it is. But its not a possible peer-to-peer networking layer between the large ON-AIR, AIR and WIRE linked ham packet user community.

73, Don. WB9MJN.

240. RE: Getting back on track

From: wb9mjn@uugate.wa7slg.ampr.org
Date: Fri, 29 Jul 94 23:49:52 mdt
To: netsig@tcet.unt.edu
Message-ID: <1575@uugate.wa7slg.ampr.org>
Rendered body type: text/plain

Hi Jeff. What was trying to say in that paragraph, is that if we build a link system, that that link system needs to have as much capacity for the spectrum it occupies. Including the switch process times, and data caring capacity of the spectrum occupied. If we build a network link with a KISS TNC PC running CSMA on a CSMA channel, the thruput available is is just not anywhere what it could be. And, yet, we ve spent allot of time, mostly, since the money hams spend on this stuff is peanuts, to acheive something that s obsolete when it was built. It will never function well enuf to not have to be rebuilt.

As far as a "cheap
" and "off-the-shelf" digital radio, i think those two items are oxymor-ons. It can't be cheap, as i believe u define that word, and yet have somebody spending their livelyhood to make it "off-the-shelf". Beyond the cost of the unit, there are costs associated with makeing something "off-the-shelf" that hams are just not willing to pay. For some reason, they see these costs as a rip-off, rather than as the going rate for a reliable vender. Where people have suceeded in this, is where the market has been skewed. The D4-10 is basically a user access radio, but probably half of them are used for links that waste spectrum, and air time. Here, two markets are combined into one for the sake of quantity, of production minimuns, at the absolute retadation of one of the markets quality issues. So, it can be "cheap", and hard to get one when u want one, or it can be "off-the-shelf" and expensive. In the radio market, there are issues involved that make the radio even more expensive than things like TNCs, above the cost of manufacture. The radios have to be FCC certified, to be "off-the-shelf". This, and developement require test equipment costing much more than the that for TNC type engineering. With the qauntities involved, this equipment willbe hard to pay for. Probably the only way to get "off-the-shelf" data radios for linking is to buy them surplus from the T1 link systems going off the air, and organise a re-building company. This way, developement is like 90 percent paid for. But,

now we are talking capital to buy lots of these radios up front, to make
doing mods worth while. Doing one at a time results in the "prototype"
cost levels, we ve discussed on here in regards to the CELLNET radios.
This is not a simple problem. And, there are people out there that may
be able to bypass some of these problems. DF9IC's group for example. But
their designs are only available as kits, at this time.

73, Don.

241. RE: Getting back on track

From: Paul Hellenberg <KS9K@mixcom.mixcom.com>
Date: Sat, 30 Jul 94 15:04:21 CDT
To: netsig@tcet.unt.edu
Message-ID: <199407302004.PAA27681@mixcom.mixcom.com>
Rendered body type: text/plain

Hi Don
Thank's for your coment's. I diffently agree and I for one am willing to
pay. I have onme d4-10 and am about ready to buy some more the improve our
packet-cluster backbone through the Chicago metro area. I am not aware of
the kit you mentioned. Can you give me some detail's or is the d4-10 the
best thing Going??????????????????
Paul
--
KS9K@mixcom.com
KS9K Paul Hellenberg
Voice 414 554-7300 Fax 414 554-8217

242. Re: What's an X-1 to do

From: DJ Gregor <dgregor@bronze.coil.com>
Date: Sat, 30 Jul 1994 22:47:15 -0400 (EDT)
To: netsig@tcet.unt.edu
Message-ID: <199407310247.WAA06788@bronze.coil.com>
Rendered body type: text/plain

> From: dkelly@nebula.tbe.com (david kelly)
>
[[stuff deleted]]
>
> Yes, yes, yes! An IP-TNC suggestion surfacing again!
>
> I too would like this kind of EPROM for a TNC-2. Once Upon A Time I spent
> some time looking for a good (but cheap) C compiler for a Z80 with the intent
> of creating this animal myself. One would think there was a version of gcc
> for the Z80, but I didn't find it, and I'm not interested in Z80 assy.
>
> There was quite a thread a month or two ago on the jnos netgroup Re: IP-TNC.
> I would like to volunteer to help, but for the next 6 months or so all I can
> offer is moral support.

I am the one that decided to work on an IP-TNC a while ago. I have since
started work on an inexpensive two-port KISS interface that will include
an IP router and AX.25 bridge. (which I may port over to a TNC-2 Z80) I
think that it would be good to have a *COMPLETE* IP router in a TNC-2, but
I have other things to do now. I would be willing to also offer help if
anyone that is experienced in Z80 programming would like to work on
such a project.

DJ Gregor, N8QLB   dgregor@bronze.coil.com   DOS sucks!
Try Linux, it's AWESOME!!! (check out sunsite.unc.edu in /pub/Linux)

243. PPP over the airwaves?

From: DJ Gregor <dgregor@bronze.coil.com>
Date: Sat, 30 Jul 1994 22:48:59 -0400 (EDT)
To: netsig@tcet.unt.edu (TAPR NETSIG)
Message-ID: <199407310249.WAA06810@bronze.coil.com>
Rendered body type: text/plain

Has anyone experimented with PPP over the airwaves?

DJ Gregor, N8QLB   dgregor@bronze.coil.com   DOS sucks!
Try Linux, it's AWESOME!!! (check out sunsite.unc.edu in /pub/Linux)

244. Packet Cluster backbone.

From: wb9mjn@uugate.wa7slg.ampr.org
Date: Sun, 31 Jul 94 09:04:38 mdt

To: netsig@tcet.unt.edu
Message-ID: <1803@uugate.wa7slg.ampr.org>
Rendered body type: text/plain

Hi Paul. Packet Cluster is a different situation than what i was speaking about. Packet Cluster is an application with its own network, rather than a network with several applications. Since there is only one application on the Packet Cluster network, and that applications absolutly miniscule int its thruput requirements (for effective) operation, the Cluster networks have not been "up against it" performance wise.

D4-10 s would work for u. But, they are a poor choice for links, that people want to do real time , file transfers, peer-to-peer mail, server-to-server bulletin disemination all at the same time, and still have capacity for anything new that comes along, after , or while the network is being built. Hell, the last time i watched the 2 meter Packet Cluster transport freqs in the area here, about a year ago, they were ticking along nicely with 1200 baud simplex, aloha channels. The generalized network is just a different world, and requires solutions that are not produced yet. Which brings me to a story that may illustrate this for u.

Back in 1986 or 7, when we had our first 9600 baud network links up, in CAPRA, my bbs was on the 9600 baud channel, so it could be accessed from the dowtown (area wide at the time) LAN, and also get out on 145.01 (over-land transport). This arrangement allowed its long packets to be DCD'd at all the stations on the 9600 baud channel, avoiding those collisions on 145.01 where they would have limited performance greatly, and also on the LAN, where few people would have heard me, as i needed a beam to get to the down-town site reliably. This worked very well for the situation we were in. And one day, i talked to a guy visiting town about it, and he wanted to come by and check it out. He did and was very impressed at how smoothly it all worked. But, it was not built out "off-the-shelf" componants. It was built with K9NG modem kits from TAPR (besides one of Steve's prototype radio and hand wired modem ;-)), Midland 13-509's, and modified MFJ1270Bs. The Mid-land 13-509 mods took 40 hours of bench time, alone, each. The guy who visited was Carl Metcalf, WK5M, who joined Kantronics, and now travels around demonstrating the D4-10 for hams at Packet Seminar's, on behalf of Kantronics. While i don t know the whole story, I like to think that demo for Carl is in part way responsible for the D4-10 :-).

But the world moves on. What was a good linking solution for 100 guys in 1986 using terminals and TNCs, is not a good solution in 1994 for people with networking on their home station PC's. This is what we are hashing out on here, now. The Packet Cluster users are still in the Terminal and TNC phase, with even smaller thruput requirments than my BBS needed to feed a few forwarding sessions, and user activity in 1987 simulatneously.

73, Don. WB9MJN.

245. Re: Packet Cluster backbone.

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Sun, 31 Jul 1994 16:32:23 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9407311624.A13240-0100000@kazak>
Rendered body type: text/plain

I guess we are differant here in the El Paso/NM area. When the local DX cluster guy started out he asked all us bbs and node people if he could use "the network". We said sure and have fun. For this enlightned act we have a major part of our network used by everyone that was put up by the DX cluster hams...

I fail to see why this mode of ham radio is so maligned by the other digital hams. It does from time to time cause a problem, just like the bbs and tcp/ip and ...ect. do. But last time I checked they are just plain hams with an interest in DX.

Period.

-karl k5di

246. RE: Getting back on track (a new question)

From: martins@scs.philips.com (Steve Martin)
Date: Sun, 31 Jul 94 23:20:48 PDT
To: netsig@tcet.unt.edu
Message-ID: <9408010620.AA16771@svln20.scs.philips.com>
Rendered body type: text/plain

>From: roberts@ses6a.bt.co.uk
Subject: Getting back on track (a new question)
To: netsig@tcet.unt.edu
Date: Fri, 29 Jul 1994 11:28:24 +0100

On 29 Jul 1994, Dave wrote:

  << Stuff deleted >>

> The question I pose - should we look at building a C7 like managed
> network - for which we need solutions at L1 and all the other levels.
> Maybe C7 is not what we need - but we need to be clear on our network
> objectives or we will be linked into incrementalism.

  << Stuff deleted >>

> Telecomms is going IN. It aims to provide a managed network on which
> services may be created. It cares not whether you put IP, voice,

  << Stuff deleted >>

> Dave
> G8KBB

I like your view on thinking *big*, but as a newbie lurking in the background
I have a question:

Tell me please, what does "IN" and "C7" stand for? I think "L7" refers to
7th layer of the OSI model. I'm just not sure about these other two.

Thanks.

****
Steve Martin, NR7P   Ph: 505-822-7274
nr7p@nr7p.ampr.org   (44.30.0.48)   FAX: 505-822-7237
Internet: martins@scs.philips.com   Pager: 505-857-9078
****

August 1994

Original source file: netsig.9408
Source: http://ftp.tapr.org/tapr_history/SIG_Archives/netsig/mail_archive/netsig.9408

1. RE: A new question

From: roberts@ses6a.bt.co.uk
Date: Mon, 1 Aug 1994 10:16:25 +0100
To: netsig@tcet.unt.edu
Message-ID: <9408010916.AA106685@tcet.unt.edu>
Rendered body type: text/plain

```
>From:  NAME: Dave Roberts
       FUNC: DTI14
       TEL: 0473 224566                    <ROBERTS AT A1 AT SES6A>
To:    "netsig@tcet.unt.edu" @ R11F @ MRGATE

>>From: Adrian Godwin <agodwin@acorn.co.uk>
>>Subject: Re: Getting back on track ( a new question )
>>To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
>>Date: Fri, 29 Jul 1994 18:10:32 +0100

>>This model seems to suit the commercial world fairly well, but there
>>are quite a lot of differences due to our different motivations and
>>funding. As amateurs, we want to explore our own interests in networking -
>>while there are many people who do just want network services, I think
>>that's a much lower proportion than in the commercial domain.

>> <<rest deleted >>

The same arguments could have been posed for early Net/Rom systems ( one
system, no tinkering, de facto solution ), at the TNC2 ( someone delivers
a solution to the world ) and at Amateur TCP/IP with KA9Q. In all cases
it is to the eternal credit of those responsible that it happened. When
Phil produced NOS, it must have been tempting to suggest that it would
never be of use as we would never have a homogeneous network fully
interconnected, and if we did very few people would have the skill to
tinker.

Emergent INs do not pre-suppose that the world will have a single IN.
What they expect is that there will be islands that will employ
similar architectures that can be interconnected by bilateral agreement
( for islands read PNOs, for similar architectures read ITU-T, ETSI
and other IN standards and CCITT-SS7 signalling. We use the TCP/IP
"standards". We have an AX.25 "standard", why not nick a bit more if
it is of use to us.

Question - what do we want our networks to do ?

Question - should we use C7 ?

And who said we can't tinker and experiment with such systems any less
than the way we tinker with anything else ? It's just the next fun thing
to look at !.


>>-adrian

Dave
```

2. Re: Packet Cluster backbone.

From: Paul Hellenberg <KS9K@mixcom.mixcom.com>
Date: Mon, 1 Aug 94 7:09:23 CDT
To: netsig@tcet.unt.edu
Message-ID: <199408011209.HAA12845@mixcom.mixcom.com>
Rendered body type: text/plain

```
Hello Don
Thank's for the response to my post it was most helpful.. I have been a
packetcluster sysop for about 4 year's however I am way behind most of you
on net-sig that's why I mainly read... You have certainly been helping with
my education .. Thank's Paul
--
KS9K@mixcom.com
KS9K Paul Hellenberg
Voice 414 554-7300 Fax 414 554-8217
```

3. Re: Packet Cluster backbone.

From: Paul Hellenberg <KS9K@mixcom.mixcom.com>
Date: Mon, 1 Aug 94 7:13:01 CDT
To: netsig@tcet.unt.edu
Message-ID: <199408011213.HAA13091@mixcom.mixcom.com>
Rendered body type: text/plain

Hello Karl
I sure agree The public and DX guy's should be working together..... I have
been trying to get that going lately.... I am new to net-sig so I just
mostly read to learn. Thank's for all you Post's. 73 Paul
--
KS9K@mixcom.com
KS9K Paul Hellenberg
Voice 414 554-7300 Fax 414 554-8217

---

4. highspeed radio docs and availability

From: Glenn Elmore <glenne@eagle.sr.hp.com>
Date: Mon, 1 Aug 1994 14:52:55 -0800 (PDT)
To: netsig@tcet.unt.edu (TAPR hsn)
Message-ID: <9408012152.AA09027@eagle.sr.hp.com>
Rendered body type: text/plain

My recent posting has generated some questions about the availability
of information, boards or kits of the 200-400 kbps radios we are using
with PI2 cards here in northern California. I think I may need to
explain the situation.

  WRT construction articles or other detailed documentation I haven't
yet published any. The fact is that I'm afraid to. The 2 Mbps 10 GHz
link published first in Ham Radio and then in the ARRL Handbook has
netted around 500 telephone calls, letters and pieces of email. My
phone still rings about once a week about it. I think I'm nearing DXCC
with countries of requests. This even though the original article is
almost five years old and was complete enough to be a construction
article (as proven by those who constructed it). Needless to say, my
XYL isn't too happy about it.

  The 904 MHz radios, interfaces and antennas have more parts, are more
complex and require working with 10 watts at 1 GHz which is arguably
more difficult than dealing with a "canned" lowpower 10 GHz transceiver.
All this is simply not easy to "kit". I'm afraid that if I publish the
plans (which are quite complete and include circuit boards and assembly
drawings, BTW) that I would generate requests for assistance that make
the 10 GHz link experiences pale in comparison. I'm sure I'd have to
change my telephone number.

  Still, I really do want to help as I can. The information on
col.hp.com under ~/hamradio/packet/n6gn was put there to help alleviate
this problem. It includes 10 GHz info, 904 antennas, ARRL CNC papers
and more. I try to add to it as I find things that might be of interest.

  I hope this doesn't sound too stuffy. I'd really *like* for folks to
be able to copy this h/w and have fun improving AR networks but I simply
don't have the resources to support what I'm sure would ensue if I
published a "how to" article. Sometimes I wish that h/w were as easy to
clone and co-develop as s/w.

  My approach is now, instead, to work on "layer 3 TNC" which is to be
an entirely printed board, very inexpensive combined direct sequence,
direct conversion, spread spectrum 1200 MHz RF assembly married to a
68302 based digital controller. The whole works is intended to be in
the cost range of current multimode TNCs but have an antenna connector
on one side and host connector (nominally a parallel port but optionally
Ethernet) on the other. It is to provide layer 3 connectivity to the
associated host. Clearly, it needs to be an open environment and
documented well enough that many can work on it together.

  This requires considerable s/w to allow economy of design. I'm
attempting to perform many previously h/w functions with s/w.
Additionally there needs to be a mechanism to provide user RF path
measurement and qualification. Fortunately the same h/w that can
recover the ~16 Mcps DS SS signal can also serve to measure path loss
and multipath component. "Just a simple matter of programming". (:>)

  This is something I'd hope would be generally available, once there is
a mechanism set up to support folks so they can reasonably expect to be
successful. However, this is an enormous project and may not be
finished in my lifetime.   1/2 (:>)

I wish I knew how to partition a project like this so that it could effectively be pursued in a physically distributed manner. But my experience to date is that close physical proximity of the contributors is extremely important. It also requires a breadth of skills; RF, CS/networking and organizational. All contributors need to cooperate well since they each have vital contributions to bring to the table and there are often solutions in one "domain" which are much more expensive or obscure in one of the others. There's no question that I need help, I just don't know how to appropriate it.

Sometimes I wonder if even the early TAPR project would have survived had it been spread over several states. Maybe some of the orignial folks are still around and care to comment.

Glenn Elmore n6gn

amateur IP: glenn@SantaRosa.ampr.org
Internet: glenne@sr.hp.com

5. REAL linking!

From: steve.stroh@strohpub.com (Steve Stroh)
Date: Mon, 1 Aug 1994 14:35:24 GMT
To: netsig@tcet.unt.edu
Message-ID: <940801223652203@strohpub.com>
Rendered body type: text/plain

Up front: This isn't a serious proposal, just passing on something that I heard that I thought was neat. This seems to be the place to share this, so... I am NOT in any way, shape, or form, associated with PageSat and will not profit from any increase in their business. I'm just an admirer of their technology- it seems like this is a perfect example of the types of things that satellite technology does *extremely* well.

PageSat is currently offering a geostationary satellite based (near) full feed of the usenet newsgroups to North America (CONUS, Southern Canada, Northern Mexico) for a one time equipment cost of under $1K plus $30/month.

One of their recent advertising blurbs mentioned that for $3K/month they can offer the same capability to a private user for their data rather than a usenet feed. What struck me was that if 750 or so individuals put up $50 each for a year of service... (or an individual or organization with very deep pockets...)

The good news is that the satellite is geostationary and easy to find (the transponder transmits a continuous tone that you can listen for with the receiver). The equipment, which includes the <1m dish, is reasonably priced considering it's highly customized. The output from the receiver is an ascii bitstream via an RS-232 port, which is then piped into a PC (or Unix box) and software "unbags" the packets onto the computer's hard disk. From that point, the data can be handled with "just software".

One problem is that the uplink would be done from PageSat in Mountain View, CA, so any messages to be distributed would have to be sent there. The downlink, other than the one time cost of the receiving equipment, for anyone other than the 750 or so "sponsors" would be, or could be, free.

The BBS traffic carried on the HF nets is an obvious candidate. I can't think of what else the downlink could be used for. The link isn't, or doesn't seem to be, real-time, so it wouldn't work for anything interactive. It's not high bandwidth so not too suitable for digitized voice or video. Binary file distribution could be another use, but this doesn't seem too practical.

If you'd like more information about PageSat, you can reach them at 415.424.0384, info@pagesat.net, or check out the usenet newsgroup biz.pagesat.

I'm NOT currently a PageSat user, although I really admire the concept. There's another satellite newsfeed system called Planet Connect that also covers Fidonet, etc., but I don't currently have any information on them.

Steve Stroh N8GNJ

steves@strohpub.com

6. RE: Getting back on track (a new question)

From: roberts@ses6a.bt.co.uk
Date: Tue, 2 Aug 1994 09:21:09 +0100
To: netsig@tcet.unt.edu
Message-ID: <9408020822.AA148852@tcet.unt.edu>
Rendered body type: text/plain

```
>From:  NAME: Dave Roberts
       FUNC: DTI14
       TEL: 0473 224566                    <ROBERTS AT A1 AT SES6A>
To:    "netsig@tcet.unt.edu" @ R11F @ MRGATE

IN stands for 'Intelligent Network'

Loosely, it is a system architecture that splits, logically, the
switching systems from the intelligence needed to route a call.
Services are created by using the intelligence layer building blocks.

C7, or CCITT-7 or SS7 or CCITT SS-7 stands for CCITT Signalling System
Number 7. CCITT is ( or was, it is now 'ITU-T' ) the telecommunications
standards organisation responsible for all those standards you see
referred to as a letter followed by a number such as

V.24, X.25, X.400, X.500, Q.700 etc

C7 is a protocol used to connect switching systems together to control
calls. It is also used in building INs.

OSI is both an ISO standard and a CCITT standard ( X.200 ).

Dave
```

7. BPQ mods to Kiss ROM

From: Adrian Godwin <agodwin@acorn.co.uk>
Date: Tue, 02 Aug 1994 10:44:22 +0100
To: netsig@tcet.unt.edu
Message-ID: <9408020944.AA27284@snark.acorn.co.uk>
Rendered body type: text/plain

```
Darryl@frink.demon.co.uk (g7led) has uploaded some KISS sources to
ftp.ucsd.edu as /hamradio/packet/tcpip/incoming/bpqkiss01.zip.

This seems to be only the standard KISS source (possibly older than
the v4 and v7 sources already available) with a CWID feature added.

There are some notes about BPQ's extensions for TX acknowledgement
and RX poll operation, but these extensions aren't included in the
source - both the source and notes date back to 1990.

-adrian
```

8. Re: REAL linking!- (PAGESAT)

From: Anthony Olszewski <aolsz@ritz.mordor.com>
Date: Tue, 2 Aug 1994 06:45:26 -0400 (EDT)
To: netsig@tcet.unt.edu
Message-ID: <199408021045.GAA16282@ritz.mordor.com>
Rendered body type: text/plain

```
Anybody thinking of getting PAGESAT should spend some time reading the
PAGESAT USENET group.  Yeah, the concept is real nifty, but the
implementation is still a little stiff around the joints.  Actual users
had quite a few complaints, mostly centering around a time lag between
feeds.  This time lag made it impossible for them to participate in any
groups.  Like anything, especially anything electronic, don't just  rely
on the sales brochure.  Like the old car company said, "ASK THE MAN WHO
OWNS ONE!"
```

9. 9600 bps data randomization question (fwd)

From: Steve Cooper <cooper@cwis.unomaha.edu>
Date: Tue, 2 Aug 1994 10:00:54 -0500 (CDT)
To: netsig@tcet.unt.edu
Message-ID: <9408021500.AA22365@cwis.unomaha.edu>
Rendered body type: text/plain

```
Someone help John
I think he is worthy of help on this one.
```

73

Steve Cooper
N0KVC
Forwarded message:
> From listmaint@AMSAT.Org Mon Aug 1 20:49:35 1994
> Date: Mon, 1 Aug 94 20:37:58 EDT
> From: magliaco@pilot.njin.net (John Magliacane)
> Message-Id: <9408020037.AA29623@pilot.njin.net>
> To: amsat-bb@amsat.org
> Subject: 9600 bps data randomization question
>
>
> Hi.
>
> Would anyone happen to know how many same data bits (1s or 0s) are allowed
> to follow one another with 17-bit LFSR randomization?
>
> As you can tell, I am designing a modem, and I need to know the lower cutoff
> frequency of the raw data coming in from the receiver.
>
> Thanks in advance!
>
> 73, de John, KD2BD
>
> --
> John A. Magliacane, KD2BD   * /\/\ * Voice   : 1-908-224-2948
> Advanced Technology Center |/\/\/\| Packet : KD2BD @ N2KZH.NJ.USA.NA
> Brookdale Community College |\/\/\/| Internet: magliaco@pilot.njin.net
> Lincroft, NJ 07738   * \/\/ * Morse   : -.- -.. ..--- -... -..
>

10. Re: REAL linking!

From: Jack Taylor <n7oo@huachuca-emh8.army.mil>
Date: Tue, 2 Aug 94 9:15:47 MST
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <9408021616.AA160690@tcet.unt.edu>
Rendered body type: text/plain

Along similar lines to the PageSat concept would be to use geosync birds
IN THE HAM BAND. The C-Band TVRO birds uplink at 6 GHz and transmit down
at 4 GHz. There are amateur bands adjacent to these ranges. It shouldn't
take much technology to broaden the band edges of the C-Band TVRO gear
to include a few narrowish band channels for ham use. Indeed in QST a
few years back there was mention of an organization proposing to do just
this, but apparently their plans changed as I have heard nothing since.

73 de Jack

11. FW: Packet Cluster backbone.

From: "Ackermann, John" <jra@lawdept.daytonoh.NCR.COM>
Date: Tue Aug 02 11:01 EDT 1994
To: 'NETSIG Mailing List' <netsig@tcet.unt.edu>
Message-ID: <2E3E51E6@wasp.daytonoh.ncr.com>
Rendered body type: text/plain

Karl wrote:

        I guess we are differant here in the El Paso/NM area. When the
local DX cluster guy started out he asked all us bbs and node people if
he could use "the network". We said sure and have fun. For this
enlightned act we have a major part of our network used by everyone that
was put up by the DX cluster hams...

        I fail to see why this mode of ham radio is so maligned by the
other digital hams. It does from time to time cause a problem, just like
the bbs and tcp/ip and ...ect. do. But last time I checked they are just
plain hams with an interest in DX.

I agree. The DX Cluster folks were one of the early supporters of the 19.2
network in Ohio, and they continue to be our biggest boosters. Their
traffic rides along on our network with no trouble at all, and they've been
good neighbors. In a 1200 baud, HTS-ridden world, there's a good reason to
put the Cluster traffic on its own network. But with any sort of real
network, the Cluster stuff fits in just fine.

John

12. Re: REAL linking!

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Wed, 3 Aug 1994 01:06:13 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9408030046.A27761-0100000@kazak>
Rendered body type: text/plain

On Tue, 2 Aug 1994, TAPR Network Special Interest Group wrote:

> From: steve.stroh@strohpub.com (Steve Stroh)
> Subject: REAL linking!
> To: netsig@tcet.unt.edu
> Date: Mon, 1 Aug 1994 14:35:24 GMT
> for digitized voice or video. Binary file distribution could be
> another use, but this doesn't seem too practical.
>
> If you'd like more information about PageSat, you can reach them
> at 415.424.0384, info@pagesat.net, or check out the
> usenet newsgroup biz.pagesat.
>
> I'm NOT currently a PageSat user, although I really admire the
> concept. There's another satellite newsfeed system called Planet
> Connect that also covers Fidonet, etc., but I don't currently have
> any information on them.
>
> Steve Stroh N8GNJ
> steves@strohpub.com
>
>

Here is the dope on Planet Connect: It is at 2 GHz and requires a larger antenna. We get the entire Fido Net "echo" series daily from that bird. It is about 10 megabytes/day and costs $40.mo plus equipment cost. This is OLD technology. For some reason we send the echo mail FROM here to the satellite via TN.

Prior to the satellite we got the 10 meg/day via 14.4 kbaud telephone modem from a neigbor state after 11 pm and it STILL cost about $75 per month. So the satellite IS cheaper.

-karl
k5di

13. Re: REAL linking!

From: "Joseph W. Stroup" <nettech@crl.com>
Date: Wed, 3 Aug 1994 01:02:47 -0700 (PDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.87.9408030147.A25989-0100000@crl.crl.com>
Rendered body type: text/plain

I support this idea 100 % . Its high time that we get involved in a geosync. series of birds.

Joseph Stroup

On Tue, 2 Aug 1994, TAPR Network Special Interest Group wrote:

> From: Jack Taylor <n7oo@huachuca-emh8.army.mil>
> Subject: Re: REAL linking!
> To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
> Date: Tue, 2 Aug 94 9:15:47 MST
>
> Along similar lines to the PageSat concept would be to use geosync birds
> IN THE HAM BAND. The C-Band TVRO birds uplink at 6 GHz and transmit down
> at 4 GHz. There are amateur bands adjacent to these ranges. It shouldn't
> take much technology to broaden the band edges of the C-Band TVRO gear
> to include a few narrowish band channels for ham use. Indeed in QST a
> few years back there was mention of an organization proposing to do just
> this, but apparently their plans changed as I have heard nothing since.
>
> 73 de Jack
>
>

14. Re: 9600 bps data randomization question (fwd)

From: mcdermot@eagle.aud.alcatel.com (Tom Mcdermott)
Date: Wed, 3 Aug 94 07:46:39 CDT

To: netsig@tcet.unt.edu
Message-ID: <9408031246.AA10564@eagle.aud.alcatel.com>
Rendered body type: text/plain

> > Subject: 9600 bps data randomization question
> >
> >
> > Hi.
> >
> > Would anyone happen to know how many same data bits (1s or 0s) are allowed
> > to follow one another with 17-bit LFSR randomization?
> >
> > As you can tell, I am designing a modem, and I need to know the lower cutoff
> > frequency of the raw data coming in from the receiver.
> >
> > Thanks in advance!
> >
> > 73, de John, KD2BD

John: there is no absolute limit to the number of consecutive one's or zero's that will be emitted from a scrambled data signal. The scrambler itself has a limited number of consecutive one's or zero's, but when that is scrambled with the (almost random) data, the resultant output can contain long strings. However, the longer strings happen with much reduced probability. Trying to make an analytical translation of this binomial distribution to frequency has proven to be difficult, mathematically.
In absolute terms, the signal should be considered to have a finite DC-content. The scrambler should help assure that long-term, there are the same number of ones and zeros in the emitted data stream (ie: the code is DC-balanced). Neither NRZ- nor NRZI- HDLC data are DC-balanced. When I designed the TPRS modem, I DC-coupled all of the signal paths. In reality, the penalty for not DC-coupling the signal is finite, and is reduced as the frequency of the coupling circuit becomes lower.

The problem is baseline-wander, which can be viewed on the eye-pattern of an AC-coupled scrambled signal. I have arbitrarily recommended about 10 hz as the SYSTEM -3db point, but remember that if there are several AC-coupling points (the receiver, the transmitter) then each should be lower than 10 hz since the effect is additive. If we put two 10 hz highpass poles in the system, the the SYSTEM response will be -6 db at the 10 hz point, not -3 db. I have no measured data, but I seem to recall about 1-2 db of penalty with a 10 hz -3 db SYSTEM cutoff as compared to my DC-coupled circuits.

One problem with extremely-low-frequency poles is that during transmit/receive switching, they make take an excessive amount of time to recover, increasing the T/R delay.

- Tom, N5EG

15. Re: 9600 bps data randomization question (fwd)

From: David Bashaw <dbashaw@synoptics.com>
Date: Wed, 3 Aug 94 10:16:52 PDT
To: netsig@tcet.unt.edu
Message-ID: <9408031716.AA02354@rimbaud>
Rendered body type: text/plain

N5EG Writes:
> The problem is baseline-wander, which can be viewed on the eye-pattern
>of an AC-coupled scrambled signal. I have arbitrarily recommended about

The only place I have seen that requires zero dc bias is on baseband systems. A 56K dsu I designed following Bell standards used RZI coding with alternate mark inversion to keep dc off the line. An LFSR will be about as good as you can do in your case I think (FWIW).

Dave Bashaw
wa6qwl

16. Re: A new question

From: Adrian Godwin <agodwin@acorn.co.uk>
Date: Wed, 03 Aug 1994 18:17:30 +0100
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <9408031717.AA28980@snark.acorn.co.uk>
Rendered body type: text/plain

> From: roberts@ses6a.bt.co.uk
>
> The same arguments could have been posed for early Net/Rom systems (one
> system, no tinkering, de facto solution), at the TNC2 (someone delivers

> a solution to the world) and at Amateur TCP/IP with KA9Q. In all cases
> it is to the eternal credit of those responsible that it happened. When
> Phil produced NOS, it must have been tempting to suggest that it would
> never be of use as we would never have a homogeneous network fully
> interconnected, and if we did very few people would have the skill to
> tinker.

Fair comment : there's a lot to be said for looking a _long_ way ahead
and starting to move in the right direction rather than trying to be too
pragmatic and limiting your vision to what's achievable in the short term.

In practice, the examples you quote are at rather different extremes -
the NET/ROM approach assumed that you wanted to keep the network access
point standard at AX.25 while routing was hidden inside it, whereas
the IP viewpoint was to make a protocol stack above whatever other
networks existed to provide a homogeneous view of far-from-homogeneous
underlying carriers. Although these two strategies can take advantage
of each other, the difference is in where the network intelligence is
placed : in the user's systems (or their peers) or hidden within the
network.

I'm not entirely sure which (if either) of the two IN fits into, though
I'd assume the former : I'm grateful for the references you gave elsewhere,
and found Q.700 on the ITU gopher, but I find I have to read a lot of
CCITT/ITU specs before any overall picture sinks in .. suggestions for
further reading welcome !

> Question - what do we want our networks to do ?

As Hank indicated : support our applications. Unfortunately, we don't
really know what applications we want, do we ? Mail and news are the
favourites right now and will always be important, but I think that's
because it's all our present amateur networks support well.

These applications demand rather different things of the network - news
is very unfussy, since it's efficiently propagated by store-and-forward
flooding and neither reliability nor speed are vital. Volume may be the
biggest problem. Mail really requires end-to-end connectivity for
reliability, but can also be carried by store-and-forward if you're
prepared to compromise on reliability somewhat.

>
> Question - should we use C7 ?

Does it solve a problem ?

>From my limited grasp of the subject, C7 seems to be used to manage
network fragments to provide a reliable whole from a set of unreliable
but redundant parts. That might well be something we could use, but it
does presuppose that sufficient network paths exist that the management
centres can control the switches.

Do you assume that this control is transmitted over the network itself
(but with lower bandwidth requirements and somehow prioritised to ensure
it gets through where user data is limited) or is it necessary to build
a separate network-control network as well as the faster data-transport
network ?

>
> And who said we can't tinker and experiment with such systems any less
> than the way we tinker with anything else ? It's just the next fun thing
> to look at !.
>

No problem with that ..

-adrian

17. Re: 9600 bps data randomization question (fwd)

From: mcdermot@eagle.aud.alcatel.com (Tom Mcdermott)
Date: Wed, 3 Aug 94 14:01:10 CDT
To: netsig@tcet.unt.edu, agodwin@acorn.co.uk
Message-ID: <9408031901.AA10674@eagle.aud.alcatel.com>
Rendered body type: text/plain

AGODWIN writes:

> Do scramblers solve the 'wrong' problem, then ? It seems that modem designs
> have fairly long scramblers to permit a simple data slicer to operate.

> Since NRZI-HDLC does have a limited LF response, it seems that these
> long scramblers make the requirement for LF response more stringent.
>
> If we could make use of radio with 300Hz LF response instead of 10Hz,
> we could make cheaper equipment, or re-use surplus equipment more
> effectively. I'm also interested in providing automatic link-quality tuning,
> perhaps controlled by CTCSS signalling alongside the data (e.g. a full-duplex
> repeater transmits a BER and eye-quality indicator instead of the input data
> when a suitable tone is detected, allowing optimisation of transmit
> equalization on-air).
>
> How could this be done ? It seems that NRZI and HDLC will together
> provide at worst a run of 5 bit-times, with only 1 bit-time before
> another run of 5 bit-times (I know flags are worse, but then it's 7
> bits one way followed by 7 bits the other, so baseline wander doesn't
> go too far). Could we use a better data slicer to handle this DC shift ?
>
> Sorry if these are stupid questions. I'm trying to learn ..
>
> -adrian
>
>
>

Adrian: the baseline wander is proportional to the density of ones ves. zeros, not to the run-length. So a scrambler is needed if one wants to control the wander. The wander is worst during the FLAG time of the HDLC singal, when milleseconds worth of FLAG characters are transmitted. Once the data part of the frame gets started, the DC level moves closer to 1/2 (but not exactly, due to zero-insertion). So, the 300 hz Low frequency part only occurs during the FLAG time, and the response moves back down to DC during the DATA part of the transmission. With a scrambler, there is no significant change regardless of what is sent.

The scrambler helps to avoid the generation of high-intensity discrete spectral lines, and this improves the operation of the clock recovery and (if used) carrier recovery circuits. The spectrum remains well-spread over the frequency band. This is important in microwave systems where there may be co-channel interference (due to polarizion multiplexing) or adjacent-channel interference.

You can avoid some problems of baseline wander if there is a known run-length (as provided by HDLC) by utilizing a more sophisticated slicing level detector. With DC-balanced codes, a low-pass filter can suffice as a slicing level determining element. With non-blanaced codes a technique is to capture the zero- and the one- levels independently with sample and hold circuits, and then take the mean level between the two as the slicing level. Generally you still want to have good low frequency response, though, as I'm sure another artifact will pop up without it, even with this improved DC-restoration technique.

Another technique of removing the LF portion is to code the transmit data, not with a scrambler, but with a systematic coder. Usually however the data rate has to be increased to add redundancy to allow this to happen and thus the circuits get quite complex.

One technique for estimating BER without actually counting the bits is to set one slicing threshold for the real data (at the midpoint) and to set two pseudo-thresholds nearer to the zero and one levels. Then some simple logic can determine if the signal crosses the threshold in the wrong place (between mid-level and a pseudo-threshold). This would result in a correct data bit, but with less than 6db SNR margin (for example with +1/2 and -1/2 thresholds). I'm not sure when the patent on this technique runs out, we got it about 15 years ago, if I remember correctly...

- Tom, N5EG

18. Re: 9600 bps data randomization question (fwd)

From: mcdermot@eagle.aud.alcatel.com (Tom Mcdermott)
Date: Thu, 4 Aug 94 07:42:08 CDT
To: netsig@tcet.unt.edu
Message-ID: <9408041242.AA11293@eagle.aud.alcatel.com>
Rendered body type: text/plain

> From: David Bashaw <dbashaw@synoptics.com>
> Subject: Re: 9600 bps data randomization question (fwd)
> To: netsig@tcet.unt.edu
> Date: Wed, 3 Aug 94 10:16:52 PDT
  ...

> The only place I have seen that requires zero dc bias is on baseband
> systems. A 56K dsu I designed following Bell standards used RZI coding
> with alternate mark inversion to keep dc off the line. An LFSR will
> be about as good as you can do in your case I think (FWIW).
>
> Dave Bashaw
> wa6qwl
>
>

Dave: you are correct that the media itself rarely requires DC-balance. Transformer-coupled circuits may require DC-balance due to saturation and other non-linear effects in transformers. Generally, our RF media do not require DC-balance.

However, the demodulator does in fact need to be concerned about the low-frequency response. If a wide-band data signal is AC coupled, the varing long-term ratios of ones-to-zeros causes the capacitors in the circuit to charge/discharge, and the equivalent DC-level thus shifts up and down. If the shift of the analog received data signal with-respect-to the recovered slicing level is significant, then the performance of the receiver is reduced, since the slicing level will be in the wrong place. This is commonly known as baseline wander of the received eye pattern.

Some solutions: 1) improve the low-frequency response so that the data does not wander (or code the data, etc.), 2) remove the wander from the signal via a DC-restoration technique, 3) modify the way the slicing levels are determined so they track the wander of the data signal.

- Tom, N5EG

19. Re: 9600 bps data randomization question (fwd)

From: bm@hydra.carleton.CA (Barry McLarnon VE3JF)
Date: Thu, 4 Aug 94 9:17:32 WET DST
To: netsig@tcet.unt.edu
Message-ID: <9408041317.AA29979@hydra.carleton.CA>
Rendered body type: text/plain

> From: mcdermot@eagle.aud.alcatel.com (Tom Mcdermott)
> Subject: Re: 9600 bps data randomization question (fwd)
> To: netsig@tcet.unt.edu, agodwin@acorn.co.uk
> Date: Wed, 3 Aug 94 14:01:10 CDT

> One technique for estimating BER without actually counting the bits
> is to set one slicing threshold for the real data (at the midpoint) and
> to set two pseudo-thresholds nearer to the zero and one levels. Then some
> simple logic can determine if the signal crosses the threshold in the
> wrong place (between mid-level and a pseudo-threshold). This would result
> in a correct data bit, but with less than 6db SNR margin (for example with
> +1/2 and -1/2 thresholds). I'm not sure when the patent on this technique
> runs out, we got it about 15 years ago, if I remember correctly...

Sigh... not to start a flame, but I don't think the general principles of pseudoerror monitoring and error-rate multiplication are patented. They have been available in the open literature since the 60's (and I used the technique in a system design in the late 70's - so sue me :-). I can supply references if you like. This patent must be on a fairly specific implementation, right?

Barry

--
Barry McLarnon VE3JF/VA3TCP | Internet: bm@hydra.carleton.ca
Ottawa Amateur Radio Club | AMPRnet: barry@va3tcp.ampr.org
Packet Working Group | FreeNet: aa187@freenet.carleton.ca

20. Re: 9600 bps data randomization question (fwd)

From: Adrian Godwin <agodwin@acorn.co.uk>
Date: Thu, 04 Aug 1994 13:47:18 +0100
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <9408041247.AA29627@snark.acorn.co.uk>
Rendered body type: text/plain

> From: mcdermot@eagle.aud.alcatel.com (Tom Mcdermott)
>
> 1/2 (but not exactly, due to zero-insertion). So, the 300 hz Low frequency
> part only occurs during the FLAG time, and the response moves back down to
> DC during the DATA part of the transmission. With a scrambler, there is
> no significant change regardless of what is sent.

Sorry, I'd got too few 1-bits in my flag .. as you say, this is the worst
case.

> slicing level determining element. With non-blanaced codes a technique
> is to capture the zero- and the one- levels independently with sample and
> hold circuits, and then take the mean level between the two as the slicing
> level. Generally you still want to have good low frequency response,

That's what I had in mind - a slicing level set midway between two well-damped
peak detectors, rather than at the mean signal level. The difference
between the two also gives deviation, which can again be useful to allow
proper setup of a user's radio and modem (assuming we want to use radios
not engineered for the job, which is unfortunately still the case for
voice-band links).

>   One technique for estimating BER without actually counting the bits
> is to set one slicing threshold for the real data (at the midpoint) and
> to set two pseudo-thresholds nearer to the zero and one levels. Then some
> simple logic can determine if the signal crosses the threshold in the
> wrong place (between mid-level and a pseudo-threshold). This would result
> in a correct data bit, but with less than 6db SNR margin (for example with
> +1/2 and -1/2 thresholds). I'm not sure when the patent on this technique
> runs out, we got it about 15 years ago, if I remember correctly...
>
>   - Tom, N5EG
>

That's a neat idea. If you could also measure the jitter on the clock via the
PLL's corrections, you could get a pretty good picture of the signal
quality. Probably no better than counting dropped packets for estimating
link quality, but much better for tuning up if you can get real-time feedback
to the user of the measured values. You could also use the multiple
threshold values as part of an error-correction scheme.

-adrian

21. Re: 9600 bps data randomization question (fwd)

From: mcdermot@eagle.aud.alcatel.com (Tom Mcdermott)
Date: Thu, 4 Aug 94 12:50:26 CDT
To: netsig@tcet.unt.edu
Message-ID: <9408041750.AA11375@eagle.aud.alcatel.com>
Rendered body type: text/plain

> From: bm@hydra.carleton.CA (Barry McLarnon VE3JF)
> Subject: Re: 9600 bps data randomization question (fwd)
> To: netsig@tcet.unt.edu
> Date: Thu, 4 Aug 94 9:17:32 WET DST
>
> Sigh... not to start a flame, but I don't think the general principles of
> pseudoerror monitoring and error-rate multiplication are patented. They
> have been available in the open literature since the 60's (and I used the
> technique in a system design in the late 70's - so sue me :-). I can supply
> references if you like. This patent must be on a fairly specific
> implementation, right?
>
> Barry
>

        Barry: I don't know the specifics of the patent, since I did not work
on it. You may well be correct about the specifics of the implementation,
I'd hate to have go dig through the files!

                                                       - Tom, N5EG

22. 9600 bps data randomization question (fwd)

From: n4hy@ccr-p.ida.org (Bob McGwier)
Date: Thu, 4 Aug 94 16:04:48 EDT
To: netsig@tcet.unt.edu
Message-ID: <9408042004.AA09001@ccr-p.ida.org>
Rendered body type: text/plain

Not to mention the fact that variable threshold slicers based on all this
knowledge have been used in RTTY demods since the 60's. I can't believe
this is patented.

Bob

23. FW: 9600 bps data randomization question (fwd)

From: "Ackermann, John" <jra@lawdept.daytonoh.ncr.com>
Date: Thu Aug 04 17:50 EDT 1994
To: "'NETSIG Mailing List'" <netsig@tcet.unt.edu>
Message-ID: <2E415525@prowler.daytonoh.ncr.com>
Rendered body type: text/plain

Tom and Adrian were talking:

> slicing level determining element. With non-blanaced codes a technique
> is to capture the zero- and the one- levels independently with sample and
> hold circuits, and then take the mean level between the two as the slicing
> level. Generally you still want to have good low frequency response,

That's what I had in mind - a slicing level set midway between two
well-damped
peak detectors, rather than at the mean signal level. The difference
between the two also gives deviation, which can again be useful to allow
proper setup of a user's radio and modem (assuming we want to use radios
not engineered for the job, which is unfortunately still the case for
voice-band links).

We're using unscrambled data with direct FSK in most of our links. Our
subjective tests indicate that, at least when using the simple Kantronics
data slicer, scrambling does <not> result in a noticeable improvement in
performance. The HDLC bit-stuffing provides enough transitions for clock
recovery. But tolerance to frequency drift leaves a lot to be desired with
the fixed decision point slicer.

Since we're working with unbalanced data, our environment might be a good
one to try out a more sophisticated slicer design. I'd be interested in
testing a dual peak-detector slicer. I'm not an RF engineer (heck, I'm not
an engineer, period!) and don't know quite what needs to be done to make the
circuit work, but if either of you want to draw up a schematic (or at least
a fairly detailed word-description), I'm willing to build it and do some
testing on our links here.

John
jra@ag9v.ampr.org

---

24. ARRL '94 Digital Comm Conf Update 8/4

From: ESTEY@SKYLER.MAVD.HONEYWELL.COM
Date: Thu, 4 Aug 1994 22:34:27 -0500 (CDT)
To: bbssig@tcet.unt.edu
Cc: ESTEY@SKYLER.MAVD.HONEYWELL.COM
Message-ID: <940804223427.2e400ae8@SKYLER.MAVD.HONEYWELL.COM>
Rendered body type: text/plain

ARRL 13th ANNUAL DIGITAL COMMUNICATIONS CONFERENCE AUGUST 19-21

Do you operate a Digital mode (maybe Pactor, Packet, GTOR or AMTOR) now?
Is it hard to keep up with the latest Digital technology? Would you like to
know more about Digital modes? If "yes" to any of these questions, then
attend the 13th Annual ARRL Digital Communications Conference.

The Conference will be held on August 19 - 21, 1994 at the Thunderbird
Convention Center, 2201 East 78th Street in Bloomington, Minnesota.
Accomodations are available at the Thunderbird Hotel, at hotels and motels
located nearby, and also at several area RV\camper campgrounds.

Enjoy a weekend of fun learning about the latest developments in TCP/IP,
PACTOR, AMTOR, PACTOR-II, CLOVER, G-TOR, PACKET, DSP, and imaging. Participate
in nine forums about DSP, new HF modes, TCP/IP, VHF/UHF networking, BBS
SYSOP issues and more. A glance at the program (attached) will show many
forums that will catch your interest!

A highlight of the conference will be the presentation of technical papers on
many aspects of digital communications throughout the day, Saturday. A list
of papers is attached. You will receive a copy of all papers presented.

Many demonstrations of the latest in hardware and software will be presented.
The conference kicks off Friday evening with an educational forum "The Basics
of Amateur Digital Communications - A Crash Course for Beginners" with
instructor John Kaplan, WR0W. The Saturday evening Technical Showcase will
feature TAPR Special Interest Group meetings for BBS SYSOPs and on VHF/UHF
network building and a technical presentation on "Low Cost HF DSP Modems" by
Johan Forrer, KC7WW.

The Hospitality Room will provide the place to meet old friends and make

new ones. At Saturday's luncheon you will get to know "who's who" in digital communications. Meet the Engineering staff of manufacturers like Kantronics and Timewave Technologies. The optional Saturday evening diner will provide another opportunity to make new friends.

If you want a break from the Conference, the Mall of America, with hundreds of unique stores, is located within walking distance. The family will enjoy Knott's Camp Snoopy theme park inside the Mall. The renowned Minnesota Zoo is only a short drive away.

The Conference registration fee is $45 per person, which includes admission to all Conference activities, a luncheon buffet and a copy of the technical papers. An optional Saturday evening buffet is $20 per person additional. Registration deadline is August 12th.

For more information about the Conference or special Airline and Motel discounts call or write:

ARRL Digital Communications Conference
C/O Paul Ramey WG0G
16266 Finland Avenue
Rosemount, MN 55068
Packet: WG0G@WA0CQG.#MSP.MN.USA.NA
Telephone: (612) 432-1640
Internet: PRAMEY@RAM.NET

The host of the 1994 ARRL Digital Communications Conference is the TwinsLAN Amateur Radio Club.

See YOU at the Digital Communications Conference August 19-21!

13th ANNUAL ARRL DIGITAL COMMUNICATIONS CONFERENCE
PRELIMINARY PROGRAM

Friday, August 19

TIME	ROOM	EVENT
Noon - 6 PM	TBD	ARRL "Future Modes" Committee meeting.
Noon - 6 PM	TBD	ARRL "219-MHz" Committee meeting.
4 - 10 PM	Winnebago	Conference check-in.
6 PM - 11 PM	Winnebago	Hospitality & Demo area are open.
7 PM - 9:30 PM	Yakima	The Basics of Amateur Digital Communications - A Crash Course for Beginners. Instructor: John Kaplan, WR0W.

Saturday, August 20

TIME	ROOM	EVENT
6:30 - Noon	Winnebago	Hospitality & Demo area open
7:00 - Noon	Winnebago	Conference Check-in.
8:00 - 8:15 AM	Miami	Conference "Welcome"
8:30 - 10:00 AM	Miami	Technical Paper Presentation
8:30 - 10:00 AM	Arapaho	Forum - Developments in DSP For the Amateur. Moderator - Bob Strickiin, N5BRG
8:30 - 10:00 AM	Choctaw	Forum - TCP/IP - What's next? Moderator - Lew Shannon, K0RR
10:00 - 10:15 AM	All	Break
10:15 - 11:45 AM	Miami	Technical Paper Presentation
10:15 - 11:45 AM	Arapaho	Forum - ARRL Committee Updates: "Future Modes": Moderator - Paul Rinaldo W4RI and "219-MHz Networking": Moderator - Tod Olson K0TO"
10:15 - 11:45 AM	Choctaw	Forum - Digital Data (Voice and Image) Transmission Method Developments.
11:45 - Noon AM	All	Break
Noon - 1:00 PM	Miami	Buffet Luncheon (Included)
1:00 - 5:30 PM	Winnebago	Hospitality & Demo area open
1:15 - 2:45 PM	Miami	Technical Paper Presentation
1:15 - 2:45 PM	Arapaho	Forum - High-Speed (above 1200 baud) data transfer methods and networking techniques.
1:15 - 2:45 PM	Choctaw	Forum - HF Data Transmission Methods - An Over-view of Current Modes and What's Coming Next. Moderator - Frank Perkins, WB5IPM

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 2:45 -  3:00 PM All       Break
 3:00 -  4:30 PM All       Continuation of all sessions
 5:30 -  6:30 PM Miami     Buffet Diner (Optional)
 7:00 - 11:00 PM Winnebago Hospitality & Demo area open
 7:00 - 10:00 PM Miami     Tucson Amateur Packet Radio
                           (TAPR) Presents Packet BBS
                           SYSOP Special Interest Group
 7:00 - 10:00 PM Arapaho   Tucson Amateur Packet Radio
                           (TAPR) Presents VHF/UHF Network
                           Building Special Interest Group
 7:00 - 10:00 PM Choctaw   American Digital Radio
                           Society (ADRS)presents a
                           technical presentation:
                           "A Low Cost DSP Modem for HF Digital
                           Experimentation" by
                           Johan Forrer, KC7WW

Sunday, August 21

TIME             ROOM      EVENT
 8:30 -  Noon    Winnebago Hospitality & Demo area open
10:00 - 11:00    Winnebago Conference wrap-up and close.

------------------------------------------------------------------------------
          13th ARRL Digital Communications Conference Proceedings

1.   A Proposal for a Standard Digital Radio Interface
        Written by Jeffrey Austen, K9JA

2.   Automatic Packet Reporting System (APRS)
        Written by Bob Bruninga, WB4APR; Presented by Gwyn Reedy, W1BEL

3.   Broadcast, UI and un-connected protocols-the future of Amateur Packet
     Radio?
        Written and Presented by Paul Evans, W4/G4BKI

4.   Packet, GPS, APRS and the Future
        Written and Presented by Paul Evans, W4/G4BKI

5.   Computer Networks in Africa: From Utopian Discourse to Working Reality
        Written by Iain Cook

6.   A Low Cost DSP Modem for HF Digital Experimentation
        Written and Presented by Johan Forrer, KC7WW

7.   G-TOR: The Protocol
        Written by Mike Huslig, Phil Anderson, Karl Medcalf and Glenn Prescott
        Presented by Karl Medcalf and Mike Huslig.

8.   GMON-a G-TOR Monitoring Program for PC Compatibles
        Written by Richard Huslig and Phil Anderson, W0XI; Presented by Phil
        Anderson.

9.   A Theoretical Evaluation of the G-TOR Hybrid ARQ Protocol
        Written by Glenn E. Prescott, WB0SKX, And Phil Anderson, W0XI;
        Presented by Glenn Prescott

10.  On Fractal Compression of Images for Narrowband Channels and Storage
        Written by Witt Kinsner, VE4WK

11.  Fast CELP Algorithm and Implementation for Speech Compression
        Written by Armein Langi, VE4ARM

12.  Wavelet Compression for Image Transmission Through Bandlimited Channels
        Written by A. Langi, VE4ARM, and W. Kinsner, VE4WK

13.  ROSE X.25 Packet Switch Status Update
        Written by Thomas A. Moulton, W2VY

14.  A Primer on Reliability as Applied to Amateur Radio Packet Networks
        Written by T.C. McDermott, N5EG

15.  FSK Modem with Scalable Baud Rate
        Written by Wolf-Henning Rech, N1EOW, and Gunter Jost, KD7WJ;
        Presented by Wolf-Henning Rech, N1EOW.

16.  MacAPRS: Mac Automatic Packet Reporting System-A Macintosh Version of APRS
        Written by Keith Sproul, WU2Z, and Mark Sproul, KB2ICI; Presented by
        Keith Sproul, WU2Z.
```

17. Formation of the TAPR Bulletin Board System Special Interest Group
        Written by David A. Wolf, WO5H; Presented by David A. Wolf, WO5H

18. How Amateur Radio Operators Can Emulate an HF ALE Radio
        Written by David R. Wortendyke, N0WGC; Presented by David R.
        Wortendyke, N0WGC.

19. A Preview of HF Packet Radio Modem Protocol Performance
        Written by Teresa Young, Stephen Rieman, David Wortendyke, N0WGC
        presented by David Wortendyke, N0WGC

20. Designing Rural Telecom Systems for Developing Countries.
        Written by Joseph Lischka, KA0NUZ; Presented by Joseph Lishhka, KA0NUZ
        NOTE: This is a hand-out and not in the ARRL Book.

Rev. 8/3/94

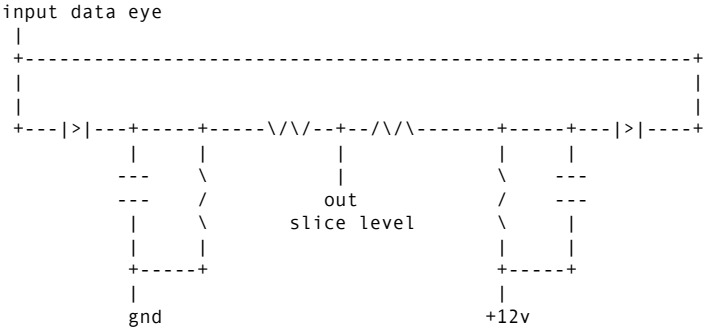
25. Re: FW: 9600 bps data randomization question (fwd)

From: mcdermot@eagle.aud.alcatel.com (Tom Mcdermott)
Date: Fri, 5 Aug 94 14:57:10 CDT
To: netsig@tcet.unt.edu
Message-ID: <9408051957.AA11650@eagle.aud.alcatel.com>
Rendered body type: text/plain

> From: "Ackermann, John" <jra@lawdept.daytonoh.ncr.com>

> Since we're working with unbalanced data, our environment might be a good
> one to try out a more sophisticated slicer design. I'd be interested in
> testing a dual peak-detector slicer. I'm not an RF engineer (heck, I'm not
> an engineer, period!) and don't know quite what needs to be done to make the
> circuit work, but if either of you want to draw up a schematic (or at least
> a fairly detailed word-description), I'm willing to build it and do some
> testing on our links here.
>
> John
> jra@ag9v.ampr.org
>
>

        John: I built a peak-detector based unit for a low-speed modem
recently, with good results. I used diode-capacitor peak detectors for
the two different levels. One circuit trick is to reference the capacitor
for the 'one' peak against the negative rail, and the capacitor for the
'zero' peak against the positive rail. This prevents a large deadband
(of two diode-drops) from appearing. Too bad I'm not good at ASCII art, but
I'll horrify all readers with this crude attempt:



This assumes that gnd=ngeative-rail, and +12v=positive rail. The parallel
RC sets the peak detector time constant, and should be larger than you think
since the signal swings only a fraction of the voltage, the time constant
is much smaller than t=RC. The two resistor that sum the output should be
equal value, and large (10x) relative to the other resistors.

                                                        - Tom, N5EG

26. Re:(2) RE : Getting Back on Track

From: tmoulton@ram.net
Date: Sat, 06 Aug 94 08:46:34 EDT
To: netsig@tcet.unt.edu
Message-ID: <06214.15021573@RAMail>
Rendered body type: text/plain

>From: net_sig@tcet.unt.edu
>Message-Id: <9407291642.AA111756@tcet.unt.edu>
>Subject: Re: RE : Getting Back on Track
>To: tmoulton@ram.net
>Date: Fri, 29 Jul 94 11:42:25 CDT
>Reply-To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
>
>From: Klarsen <klarsen@acca.nmsu.edu>
>Subject: Re: RE : Getting Back on Track
>To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
>Date: Fri, 29 Jul 1994 08:07:33 -0600 (MDT)
>
>
>
>On Fri, 29 Jul 1994, TAPR Network Special Interest Group wrote:
>
>> From: Glenn Elmore <glenne@eagle.sr.hp.com>
>> Subject: Re: RE : Getting Back on Track
>> To: netsig@tcet.unt.edu
>> Date: Thu, 28 Jul 1994 11:32:47 -0800 (PDT)
>
>   Tons of good stuff deleted...
>
>>
>>   Doesn't it make sense for us to look at what we must do to have
>> success at L1 before we decide on what should/shouldn't be done at L2-3
>> and above?
>>
>>   I guess by now everyone will be tired of hearing me repeat the same
>> song so I'll stop.
>>
>> Glenn n6gn
>
>   Keep singing this song Glen. This is the net sig and should
>abound with sweaty guys hanging off towers on hills trying to make the
>dam L1 link work. I believe the software to do what we need is available
>and we are using it now. What is not available is people like you Glenn
>that have put up a system and made it work; at high speed and with
>reliability.
>
>   We need more songs from you and less from people like the fine
>guy doing the ROSE switch who is "now writing code that will allow...".
>This is relevant but not as interesting as what you have done.
>
>-karl
>k5di
>
>
I wonder how many of the ROSE bashers have actually used it in the recent
past... or maybe it's just that it isn't IP so it isn't good.

Karl, Just because what I might have to say isn't interesting to you let's
not forget that there are many other peopel on list list :)

27. Re: 9600 bps data randomization question

From: ka7oei@uugate.wa7slg.ampr.org
Date: (date unavailable)
To: netsig@tcet.unt.edu
Rendered body type: text/plain

[Empty message body]

28. Re: 9600 bps data randomization question

From: "Joseph W. Stroup" <nettech@crl.com>
Date: Sun, 7 Aug 1994 00:37:28 -0700 (PDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.87.9408070028.A20401-0100000@crl.crl.com>
Rendered body type: text/plain

I am very interested in this T-1 modem design. Can you contact me direct
on the net and save space on this list ?

Thanks,

Joseph Stroup

29. Re:(2) RE : Getting Back on Track

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Sun, 7 Aug 1994 08:05:01 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9408070756.A21200-0100000@kazak>
Rendered body type: text/plain

On Sat, 6 Aug 1994, TAPR Network Special Interest Group wrote:

> From: tmoulton@ram.net
> Subject: Re:(2) RE : Getting Back on Track
> To: netsig@tcet.unt.edu
> Date: Sat, 06 Aug 94 08:46:34 EDT
>
> >
> >   We need more songs from you and less from people like the fine
> >guy doing the ROSE switch who is "now writing code that will allow...".
> >This is relevant but not as interesting as what you have done.
> >
> >-karl
> >k5di
> >
> >
> I wonder how many of the ROSE bashers have actually used it in the recent
> past... or maybe it's just that it isn't IP so it isn't good.
>
> Karl, Just because what I might have to say isn't interesting to you let's
> not forget that there are many other peopel on list list :)
>
>
        Please be fair. I was not bashing ROSE. Rather I feel it is a
good example of software that is evolving into some new form that will
pass IP packets along with all the others.

        My point is just a few guys can work on ROSE. A lot of guys can
work on improving the hardware side L1 part of the network.

-karl
k5di

30. Re: View towards the 21st Century

From: ssampson@sabea-oc.af.mil (Steve Sampson)
Date: Sun, 7 Aug 1994 10:00:03 -0500 (CDT)
To: netsig@tcet.unt.edu
Message-ID: <9408071500.AA28405@sabea-oc.af.mil>
Rendered body type: text/plain

> I wonder how many of the ROSE bashers have actually used it in the recent
> past... or maybe it's just that it isn't IP so it isn't good.
>
> Karl, Just because what I might have to say isn't interesting to you let's
> not forget that there are many other peopel on list list :)

I don't think it's Rose bashing, or Net/Rom bashing. What most of us have
found is, that the ham links are toys. There's nothing wrong with the
protocols that can't be fixed with better radios (full vs half duplex).
I think a Rose or Net/Rom operated full-duplex would be a real network,
and one that might do some good. From this point I find the protocols are
designed for small and low-speed networks. Once you get them to operate
with larger packets, maybe I'll change my mind.

The trouble with Rose is that it attracts people with thin skins. You can't
discuss problems openly. Whenever I talk about a problem with Rose, I get
18 pieces of mail telling me I'm going to hell for siding with the Devil.
It's just software, nothing to take up arms about. It's just the opposite
with the TheNet people: they don't speak at all.

I think commercial software developers learned their lesson many years ago.
They don't talk about upcoming products because it may fall behind schedule
or never be released. Rose is that way. We've been hearing about version 3.5
for a year now and nothing has been seen. We can't judge a protocol on what it
may be capable of doing 5 years from now, we can only judge it on what it does
today. Today it is a toy. Anything that limits you to 256 bytes in a packet is
a toy when it comes to high speed. But toys can be fun, if we spent a little
money (on full duplex) maybe the toy could even be useful.

I think if you're not working on a PC version of Rose or TheNet you're stuck
in a rut and designing for the 80's, while I would pat you on the back for
designing something for 2001. I fear we will enter the 21st Century looking at
TNC-2 networks, thus my prod. I don't think the FCC will put up with that, and
probably sell off the frequencies to someone more excited about radio.

Think about where Rose would be if it had a PC and two PI2 cards? Gee, that's
90's technology. Thus we're left with the only software that does operate with
a PC and PI2 cards: TCP/IP. If you want us to talk about hi-speed and Rose, you
got to come up with the protocol to run on a PC. There's nothing fancy about
TCP/IP over Rose or TheNet, it's just that IP folks don't foam at the mouth
when discussing the network infrastructure.

Maybe if Gracilis released a Rose version of the PackeTen all the worlds
problems would be solved :-)

--
Steve

31. Re:(2) Half-Duplex and Rose

From: tmoulton@ram.net
Date: Sun, 07 Aug 94 11:02:02 EDT
To: netsig@tcet.unt.edu
Message-ID: <06217.15021573@RAMail>
Rendered body type: text/plain

>From: net_sig@tcet.unt.edu
>Message-Id: <9407301150.AA149834@tcet.unt.edu>
>Subject: Re: Half-Duplex and Rose
>To: tmoulton@ram.net
>Date: Sat, 30 Jul 94 6:50:14 CDT
>Reply-To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
>
>From: ssampson@sabea-oc.af.mil (Steve Sampson)
>Subject: Re: Half-Duplex and Rose
>To: netsig@tcet.unt.edu
>Date: Fri, 29 Jul 1994 10:46:12 -0500 (CDT)
>
>
>I just remembered something I thought of a couple of months ago.
>
>One of the network solutions locally has been a 1200/9600 Rose
>circuit to Texas. Actually Larry (WB5CQU) set this up so he
>could link with his brother, and we [Okies] are just
>free-loading... But the 1200 users are theoretically transported
>via the 9600 backbone.
>
>It doesn't really work very well because of some known
>limitations: the distance between nodes is too great, and the
>9600 is on the same frequency all the way up and down and across
>
>[stuff deleted]
>
>So for cheap VC networks, done half-duplex, maybe an ACK feature
>that uses the other node can solve some of the problems that
>slow these type of networks down
>
>[stuff deleted]
>--
>Steve
>
Steve,

You seem to be blaming a networking protocol stack for the problems of a
specific implementation.

Here in NJ we use many different backbone channels for linking and have a
network that can handle data quite nicely. We strive for no hidden
transmitters on the backbone and usually have no more that three systems on
a given frequency. We do NO linking on user channels and do nothing on 145.01!

We have access channels on three or four 2m channels. We use high profile
sites for backbone linking and low profile sites for user access. We have
about 8 or so locations where we have 2m User ports.

These design parameters are independent of L2 and above, and just make good
sense for RF network design.

73, Tom W2VY

32. Let's Get to Work!

From: tmoulton@ram.net
Date: Sun, 07 Aug 94 11:24:38 EDT

To: netsig@tcet.unt.edu
Message-ID: <06218.15021573@RAMail>
Rendered body type: text/plain

>
>> From: Glenn Elmore <glenne@eagle.sr.hp.com>
>> Subject: Re: RE : Getting Back on Track
>> To: netsig@tcet.unt.edu
>> Date: Thu, 28 Jul 1994 11:32:47 -0800 (PDT)
>
>   Tons of good stuff deleted...
>
>>
>>   Doesn't it make sense for us to look at what we must do to have
>> success at L1 before we decide on what should/shouldn't be done at L2-3
>> and above?
>>
>>   I guess by now everyone will be tired of hearing me repeat the same
>> song so I'll stop.
>>
>> Glenn n6gn
>

Glenn,

We need to look at both!

The majority of the L1 problems result from poor network design, there have
been many discussions on what should and should not be done in building a
network. One of the results of such a discussion is the set of rules that
NEDA uses for their network. The top item on their list is a system with
No Hidden Transmitters. There are others, I will get the list and post it.

Maybe one topic we as a group should adress is this list, additional items
and then once we have a list of baseline assumptions for the virtual network
which we are discussing then we can consider enhancements to L1 to either
improve performance or remove one of the listed assumptions/requirements to
provide a more powerfull solution over all.

Another topic we should open up for discussion is what specific functionality
do we need to provide to users?

But first we need to define a User. (I define a user as any Data Terminating
Element - AX.25 TNC User, BBS, Server, Router) We need to have a specific
list of User Types and operating modes.

There are other things that need to be done, but I think that two objectives
and discussions is enough for one mailing list.

73, tom w2vy@ram.net

33. Re: View towards the 21st Century

From: Jack Taylor <n7oo@huachuca-emh8.army.mil>
Date: Sun, 7 Aug 94 14:25:31 MST
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <9408072124.AA155329@tcet.unt.edu>
Rendered body type: text/plain

I agree with Steve, Tom, and previously Don, WB9MJN. If we are going to
design networks for the future, attention has to be paid to the RF
link configuration. User access nodes below 450 MHz are probably OK, but
we need to look above 450 MHz for trunking frequencies with enough
bandwidth to carry the anticipated load. We can discuss protocols til
we are blue in the face but if the RF link doesn't have the necessary
signal to noise ratio, then the more advanced protocols are not going
to work well.

We as hams haven't paid too much attention to RF link design. Most of our
links are stuck up with an intuitive hope that they will work. In the
commercial world, there is an established methodology to setting up
point-to-point RF links. You will note high capacity circuits (before
fiber) relies on microwave.

As far as I know, the only one on the net to seriously explore microwave
is Glenn, N6GN. He has reported his results. Another who is getting
serious about microwave is Clint, KA7OEI who has designed a T1 modem
to use with his system. As a group, we need to focus our attention on
microwave linking so we understand the theory and the tradeoffs involved.

I hear rumors there are old commercial microwave units that may be

available, but I haven't heard anything specific. We need to followup
on this. It's very possible we would only need certain components, rather
than entire racks of equipment. We need to understand which are the
critical items for our application. Above all, we need to be mindfull
of link to link costs for installation and maintenance. There is little
point of putting in a nice high capacity link if there isn't technical
talent over a period of time, to maintain it. Thus, if we get that far,
a training effort needs to be launched. If we don't move out towards
microwave, then that pretty much leaves the internet as the only system
realistically capable of carying high volumes of amateur traffic.

73 de Jack

34. Re: 9600 bps data randomization question

From: barnaby@world.std.com (Richard L Barnaby)
Date: Sun, 7 Aug 1994 17:40:56 -0400
To: netsig@tcet.unt.edu
Message-ID: <199408072140.AA06805@world.std.com>
Rendered body type: text/plain

Joseph,
You might have a reflector problem.
I asked to be on your list for Internet providers/problems etc.
I just got email from your mail to TAPR-SIG (to which I also belong (AA1IB)
but this is "off-topic" for Internet providers.
Thought you'd like to know about it.

```
*****************************************************************************
 Richard L. Barnaby        Internet: barnaby@world.std.com                 *
 Business Support Services Amateur Radio AA1IB                             *
 1850 West Hill Road                                                       *
 Worcester, VT 05682       "Man was not created                            *
 Phone:802-223-1234          to remember... or invent... what he did       *
 Fax  :802-223-1917            with every cent"   -Robert Frost            *
*****************************************************************************
```

35. Re:(3) RE : Getting Back on Track

From: tmoulton@ram.net
Date: Sun, 07 Aug 94 14:27:24 EDT
To: netsig@tcet.unt.edu
Message-ID: <06219.15021573@RAMail>
Rendered body type: text/plain

>From: net_sig@tcet.unt.edu
>Message-Id: <9408071737.AA144459@tcet.unt.edu>
>Subject: Re:(2) RE : Getting Back on Track
>To: tmoulton@ram.net
>Date: Sun, 7 Aug 94 12:37:10 CDT
>Reply-To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
>
>From: Klarsen <klarsen@acca.nmsu.edu>
>Subject: Re:(2) RE : Getting Back on Track
>To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
>Date: Sun, 7 Aug 1994 08:05:01 -0600 (MDT)
>
>
>
>On Sat, 6 Aug 1994, TAPR Network Special Interest Group wrote:
>
>> From: tmoulton@ram.net
>> Subject: Re:(2) RE : Getting Back on Track
>> To: netsig@tcet.unt.edu
>> Date: Sat, 06 Aug 94 08:46:34 EDT
>>
>> >
>> >   We need more songs from you and less from people like the fine
>> >guy doing the ROSE switch who is "now writing code that will allow...".
>> >This is relevant but not as interesting as what you have done.
>> >
>> >-karl
>> >k5di
>> >
>> >
>> I wonder how many of the ROSE bashers have actually used it in the recent
>> past... or maybe it's just that it isn't IP so it isn't good.
>>
>> Karl, Just because what I might have to say isn't interesting to you let's
>
>> not forget that there are many other peopel on list list :)

>>
>>
>   Please be fair. I was not bashing ROSE. Rather I feel it is a
>good example of software that is evolving into some new form that will
>pass IP packets along with all the others.
>
>   My point is just a few guys can work on ROSE. A lot of guys can
>work on improving the hardware side L1 part of the network.
>
>-karl
>k5di
>
>
ROSE from it's inception has been designed to pass all data without respect
to what the upper layer protocol is. Any feature that is added to ROSE is
done to provide support for ALL modes, not any specific protocol.

Yes I want to support IP, but the features I am adding will help more than
just the IP community.

I agree that much work can be done to give us better modems and better
channel access, I addressed that in another message.

73, tom

36. Re:(2) View towards the 21st Century

From: tmoulton@ram.net
Date: Sun, 07 Aug 94 22:00:23 EDT
To: netsig@tcet.unt.edu
Message-ID: <06220.15021573@RAMail>
Rendered body type: text/plain

>From: net_sig@tcet.unt.edu
>Message-Id: <9408071759.AA147711@tcet.unt.edu>
>Subject: Re: View towards the 21st Century
>To: tmoulton@ram.net
>Date: Sun, 7 Aug 94 12:59:30 CDT
>Reply-To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
>
>From: ssampson@sabea-oc.af.mil (Steve Sampson)
>Subject: Re: View towards the 21st Century
>To: netsig@tcet.unt.edu
>Date: Sun, 7 Aug 1994 10:00:03 -0500 (CDT)
>
>
>I don't think it's Rose bashing, or Net/Rom bashing. What most of us have
>found is, that the ham links are toys. There's nothing wrong with the
>protocols that can't be fixed with better radios (full vs half duplex).

That may not be 100% true, which is why I think we also need to discuss
what we want the network to provide. (One example is that NetRom's routing
falls apart when you have a large network >n hops edge to edge [N is 10, 20
or maybe 30 nodes] - I know of one network which is having this problem)

>I think a Rose or Net/Rom operated full-duplex would be a real network,
>and one that might do some good. From this point I find the protocols are
>designed for small and low-speed networks. Once you get them to operate

ROSE was designed for a small network the size of the USA, low speed 9600.

>with larger packets, maybe I'll change my mind.

What do you consider the "right" size?

>
>The trouble with Rose is that it attracts people with thin skins. You can't
>discuss problems openly. Whenever I talk about a problem with Rose, I get
>18 pieces of mail telling me I'm going to hell for siding with the Devil.

Not from me! I do get pissed when incorrect statements are made that would
misinform the masses that are just watching...

>It's just software, nothing to take up arms about. It's just the opposite
>with the TheNet people: they don't speak at all.

It IS just software - and I want to make sure it gives us what we need..
which brings me back to an earlier question... what do we want the Network
to provide to Users?

>
>I think commercial software developers learned their lesson many years ago.
>They don't talk about upcoming products because it may fall behind schedule
>or never be released. Rose is that way. We've been hearing about version 3.5
>for a year now and nothing has been seen. We can't judge a protocol on what
it

I have not promised 64K eprom for over a year! Maybe 6 Months. The Big eprom
has nothing to do with the Protocol, just the maintance for the
implementation.

>may be capable of doing 5 years from now, we can only judge it on what it
does
>today. Today it is a toy. Anything that limits you to 256 bytes in a packet
is
>a toy when it comes to high speed. But toys can be fun, if we spent a little
>money (on full duplex) maybe the toy could even be useful.
>
>I think if you're not working on a PC version of Rose or TheNet you're stuck
>in a rut and designing for the 80's, while I would pat you on the back for
>designing something for 2001. I fear we will enter the 21st Century looking
at
>TNC-2 networks, thus my prod. I don't think the FCC will put up with that,
and
>probably sell off the frequencies to someone more excited about radio.

Let's not bind our solution to a PC platform. What are the requirements? Once
we know them we can then pick a solution.
>
>Think about where Rose would be if it had a PC and two PI2 cards? Gee, that's
>90's technology. Thus we're left with the only software that does operate
with
>a PC and PI2 cards: TCP/IP. If you want us to talk about hi-speed and Rose,
you
>got to come up with the protocol to run on a PC. There's nothing fancy about
>TCP/IP over Rose or TheNet, it's just that IP folks don't foam at the mouth
>when discussing the network infrastructure.
>

tom

37. Re: 9600 bps data randomization question

From: Adrian Godwin <agodwin@acorn.co.uk>
Date: Mon, 08 Aug 1994 16:45:19 +0100
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <9408081545.AA02884@snark.acorn.co.uk>
Rendered body type: text/plain

> From: ka7oei@uugate.wa7slg.ampr.org
>
> I have gotten some criticism for this (mainly owing to increased complexity)
> but the baseband amplifiers that we are using seem to have good DC response
> down to 30Hz or so at the -1db points (uhhh... Not "DC" response, lowpass
> response... yeah...) Also, since this is full-duplex, settling time is
> not particularly important, but the time constants are on the order of a
> few milliseconds... but that is much faster than the LP response... and
> it is MUCH shorter than the T1 data stream.
>

The settling time could be more of a problem where the sync period is
prefaced by unsquelched audio - the limits will open right up, and the
slicing level will be meaningless until the levels have decayed back to
the demodulated peaks.

I wonder if the time constant could be varied - fast (< 8 bit times)
while the clock recovery PLL is out of lock, and slow (> 16 bit times)
when in lock.

-adrian

38. Re: 9600 bps data randomization question

From: Glenn Elmore <glenne@eagle.sr.hp.com>
Date: Mon, 8 Aug 1994 10:35:32 -0800 (PDT)
To: netsig@tcet.unt.edu
Message-ID: <9408081735.AA20115@eagle.sr.hp.com>
Rendered body type: text/plain

>
> From: Adrian Godwin <agodwin@acorn.co.uk>

> The settling time could be more of a problem where the sync period is
> prefaced by unsquelched audio - the limits will open right up, and the
> slicing level will be meaningless until the levels have decayed back to
> the demodulated peaks.
>
> I wonder if the time constant could be varied - fast (< 8 bit times)
> while the clock recovery PLL is out of lock, and slow (> 16 bit times)
> when in lock.

  We ran into this when we first were writing drivers for my radios.
The first data edge that the radio produces can be important since with
the 8530/85230 internal clock recovery (DPLL) if that edge is not a data
edge, it can take 16 or 32 more transitions for it to "unlearn" its
error.
  This causes the quality of DCD to be an issue if/when the RxData is
qualified by DCD. If there is T/R garbage which causes falsing or
chatter on the DCD line at a time when signal is not present then bogus
edges can occur.
  I deliberately built a very fast DCD into the radios which is good for
getting things cooking quickly (we can operate with under 50
microseconds of TxDelay) but demands that transient behavior of the
entire radio be dealt with properly.

  In effect, the DPLL of the ESCC has a search/lock mode. The first
edge seen has particular clout(rather like "speedup" circuits in a
conventional PLL) since it starts things running and it then takes more
edges to correct any errors it might have made (due to false DCD, qrm or
whatever). The PI2 card qualifies RxD with DCD so radio DCD and its
dynamics are important.

  One of the tasks of L1 h/w is to provide reliable information about
signal presence and quality so that downstream blocks aren't unduly
burdened. This seems to be the case even where there are no
soft-decision circuits or FEC.

Glenn n6gn

39. Re: View towards the 21st Century

From: kb7uv@panix.com (Andrew Funk)
Date: Mon, 08 Aug 1994 17:20:31 -0400
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <199408082109.AA14294@panix.com>
Rendered body type: text/plain

At 12:47 PM 8/7/94 CDT, ssampson@sabea-oc.af.mil (Steve Sampson) wrote:

>The trouble with Rose is that it attracts people with thin skins. You can't
>discuss problems openly. Whenever I talk about a problem with Rose, I get
>18 pieces of mail telling me I'm going to hell for siding with the Devil.
>It's just software, nothing to take up arms about. It's just the opposite
>with the TheNet people: they don't speak at all.

If have had anything to do with your feeling (above) please accept my
apology. We at RATS have definitely been vocal advocates of ROSE, but it
has never been our intention to berate anyone! And we do welcome bug
reports and sugestions.

>I think if you're not working on a PC version of Rose or TheNet you're stuck
>in a rut and designing for the 80's, while I would pat you on the back for
>designing something for 2001.

There are other processors beside the basic Z-80 which utilize the same
instruction set, and which perform quite well as high-speed network
switches. Just because something is designed around the TNC-2 as a *base*
platform does not mean it is not suitible for future, higher-speed networking.

And, as there are so many TNC-2 compatibles in networking service today, and
as there are new devices based-upon (and code compatible with) the TNC2
coming into production, it remains an excellent platform for development.

Howver, I do agree with you that we must be more farsighted in our outlook.
We need to determine our goals for, say, the year 2001, and begin to work
towards that goal.

What do we want to see for Amateur Packet Radio in 2001?

Well, here's my vision:

  * A nationwide high-speed "data pipe" network;

  * The network itself determines the best route for a given connection or datagram to take;

  * The network designed for Inernational routing;

  * The network is "transparent" to other networking protocols (such as TCP/IP);

  * The network is intelligently designed and managed to assure performance;

  * All servers (PBBSs, WX Nodes, Convers Nodes, DX Clusters, game servers, etc.) are accessed *through* the network, and don't "compete" on the user channels;

  * User access to the network is "cellularized" to limit hidden transmitters on the user channels;

  * High speed access to the network is available to users.

> I fear we will enter the 21st Century looking at
>TNC-2 networks, thus my prod. I don't think the FCC will put up with that,
>and probably sell off the frequencies to someone more excited about radio.

Personally I don't see the FCC as a threat at all. I'm more concerned that Amateur Packet Radio will be a total bore when compared to other means of data communications that are becoming available.

>Think about where Rose would be if it had a PC and two PI2 cards? Gee,
>that's 90's technology. Thus we're left with the only software that does
>operate with a PC and PI2 cards: TCP/IP. If you want us to talk about
>hi-speed and Rose, you got to come up with the protocol to run on a PC.
>There's nothing fancy about TCP/IP over Rose or TheNet, it's just that IP
>folks don't foam at the mouth when discussing the network infrastructure.

It's unfortunate, in my opinion, that network infrastructure (toplogy, management, etc.) are often ignored when intially implementing a network. The Northe East Digital Association (NEDA) has spend considerable effort determining optimal topologies (networking on diferent frequencies than user access, no hidden transmitters on network frequencies, high preference for point-to-point network links, etc.) and operating parameters (TheNet settings, etc.).

Nodes connected "the NEDA way" seem to enjoy better throughput than any others I've used (and there are many non-NEDA Nodes here in the NYC area).

My vision of packet networking includes applications like DX Clusters and Mail/News Servers (PBBSs), as well as TCP/IP users, sharing the same hight-speed "backbone". I believe that DX Clusters and other non-TCP/IP uses will continue to exist. Therefore I feel that we must explore lower overhead alternatives to TCP/IP for the network backbone.

Can we, perhaps, "appoint" a sub-committee of the list with this task:

     Create an "RFC" specification for the Amateur Packet Radio Network
     for the year 2001.

Then, once we have a proposed spec for the network, send out a Request For Proposals to allow developers to show how they could meet the proposed specification.

Perhaps this will result in proposals for networks based upon current methodology (TCP/IP, theNet, ROSE, TexNet, FlexNet, etc.). However, we may well see this lead to "cross-polination" and/or entirely new methodology/protocols.

We *all* have good ideas. (Yes, even those of you whom I disagree with!!) However, if we simply continue as we have been I doubt we'll achieve our common goal of truly improved packet. If we approach this in an organized fashion, similar to my suggestion of rfc/rfp (above), we will have a much better chance of actually achieving (or even exceeding!) our goals.

73, Andy

>
>Maybe if Gracilis released a Rose version of the PackeTen all the worlds
>problems would be solved :-)

Nyah... ROSE can't transport food from areas with surplus to those with
famine. Wish it could! ;-)

--

    _____________________ Andrew Funk, KB7UV _____________________
   | ENG Editor/Microwave Control, WCBS-TV Channel 2 News, New York |
   | Internet: kb7uv@panix.com   Packet: kb7uv@kb7uv.#nli.ny.usa |
   | --- INSERT COMMERCIAL HERE --- |

40. Re: Let's Get to Work!

From: Glenn Elmore <glenne@eagle.sr.hp.com>
Date: Mon, 8 Aug 1994 14:53:38 -0800 (PDT)
To: netsig@tcet.unt.edu
Message-ID: <9408082153.AA15757@eagle.sr.hp.com>
Rendered body type: text/plain

tmoulton@ram.net wrote:

> The majority of the L1 problems result from poor network design, there have
> been many discussions on what should and should not be done in building a
> network. One of the results of such a discussion is the set of rules that
> NEDA uses for their network. The top item on their list is a system with
> No Hidden Transmitters. There are others, I will get the list and post it.

  I agree that we need to describe what our goal is. Because some
solutions do not scale well, could we define what we mean by "an
adequate network" or some such?

  For certain combinations of user investment, density (geographic as
well as mental (:>)) and datarate there may be very different solutions.
For example, the hidden transmitter problem may be considered a serious
degradation in some contexts, perhaps reducing effective channel
utilization to below 20% of potential. However that degradation is
small potatoes compared to the loss of several orders of magnitude if we
are comparing available user datarates on a network made from an
omni/broadcast shared channel with one made of point-point quality paths
and highly directional antennas.

  The former is possibly a relatively small step from where we are now;
say, getting all users effectively using/sharing 9600 bps channels with
currently available h/w. It is not even a possibility if we are talking
about a network which can, on average, provide many kbps of long
distance, low latency access to each user worldwide.

  How much can amateur radio hope to bite off? How much must it be able
to offer in order to stay vital and grow?

> Maybe one topic we as a group should adress is this list, additional items
> and then once we have a list of baseline assumptions for the virtual network
> which we are discussing then we can consider enhancements to L1 to either
> improve performance or remove one of the listed assumptions/requirements to
> provide a more powerfull solution over all.
>
> Another topic we should open up for discussion is what specific functionality
> do we need to provide to users?

  I think we may be suggesting similar topics. However, I wonder if
those on this group, much less those it would/will take to build a
"network", will be able to come to agreement on what a suitable network
is. If we can't, how can we hope to jointly develop one? If we "let
the market decide", can we expect to get anything more than slight
iterations on what (little) we presently have?

Glenn n6gn

41. Re: View towards the 21st Century

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Tue, 9 Aug 1994 09:46:36 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9408090910.A15370-0100000@kazak>

Rendered body type: text/plain

Since the arguement on this topic has dropped to just ROSE and
P12 I want to make a few points. First, the theory of relativity was
first seen in 1916 but it changes our life daily. So if you want to dam a
software or hardware just because it's 5 years old, go ahaead and be stupid!

There are good reasons not to use a z-80 cpu at 4.003 MHz clock
because this is slow by todays standards. You can still buy a speed-up
kit for the tnc-2 that has a 10 MHz clock and IO chips to handle this
speed. But even this may be slow in a large city. But a 10 MHz tnc-2 may
be just the ticket for an area like West Texas where the ham population
is low and little money is available.

For a city we need something that is fast and stable. To be fast
it cannot have "hidden transmitters" and must handle a huge amount of
traffic in the city. For this I suggest a bit-wise regenerator on n
frequencies where n is an integer from 1 to ?. The switch software will
be the OLD G8BPQ switch which has been tested at 56 kbaud.

There will NEVER be a packet radio network that covers the entire
USA. This is a wonderful goal, but it is just too expensive. At this time
we have the BBS Network that covers SOME of the USA. We have the Internet
that covers SOME of the USA. And we have the Telephone Companies that
cover ALL the USA. We can never have the resources of the telephone
companies.

So now lets get back to the basics. How can we help cities build
good packet radio networks. How can the town and country hams ever get
things working to connect at ANY speed to a city?

Stop messing around with words. Let's DO something!

-karl
-k5di

42. Re:(2) Let's Get to Work!

From: tmoulton@ram.net
Date: Tue, 09 Aug 94 13:17:06 EDT
To: netsig@tcet.unt.edu
Message-ID: <05194.15021573@RAMail>
Rendered body type: text/plain

>From: net_sig@tcet.unt.edu
>Message-Id: <9408090717.AA109044@tcet.unt.edu>
>Subject: Re: Let's Get to Work!
>To: tmoulton@ram.net
>Date: Tue, 9 Aug 94 2:17:24 CDT
>Reply-To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
>
>From: Glenn Elmore <glenne@eagle.sr.hp.com>
>Subject: Re: Let's Get to Work!
>To: netsig@tcet.unt.edu
>Date: Mon, 8 Aug 1994 14:53:38 -0800 (PDT)
>
>
>tmoulton@ram.net wrote:
>
>> The majority of the L1 problems result from poor network design, there hav
>e
>> been many discussions on what should and should not be done in building a
>> network. One of the results of such a discussion is the set of rules that
>> NEDA uses for their network. The top item on their list is a system with
>> No Hidden Transmitters. There are others, I will get the list and post it.
>
>
> I agree that we need to describe what our goal is. Because some
>solutions do not scale well, could we define what we mean by "an
>adequate network" or some such?
>
> For certain combinations of user investment, density (geographic as
>well as mental (:>)) and datarate there may be very different solutions.

Very good point.

>For example, the hidden transmitter problem may be considered a serious
>degradation in some contexts, perhaps reducing effective channel
>utilization to below 20% of potential. However that degradation is
>small potatoes compared to the loss of several orders of magnitude if we
>are comparing available user datarates on a network made from an

>omni/broadcast shared channel with one made of point-point quality paths
>and highly directional antennas.
>

The L1 problems are different for each one. Maybe we need to discover
what types of topologies the members of netsig are using. Would you
(or anyone) be interested in working on a brief survey to see what
topologies people are using and what their limiting factors seem to be?

> The former is possibly a relatively small step from where we are now;
>say, getting all users effectively using/sharing 9600 bps channels with
>currently available h/w. It is not even a possibility if we are talking
>about a network which can, on average, provide many kbps of long
>distance, low latency access to each user worldwide.

The networking protocols can handle fair sharing of the bandwidth, we just
need to get as many bits available per second as we can. Even if it is
only 1200 baud on some paths if it works well I bet people will want
to upgrade... to 9600 or maybe right to 64k!

> How much can amateur radio hope to bite off? How much must it be able
>to offer in order to stay vital and grow?
>
If we can't build a network that we would want to use then we're going
about it all wrong...

>> Maybe one topic we as a group should adress is this list, additional items
>
>> and then once we have a list of baseline assumptions for the virtual netwo
>rk
>> which we are discussing then we can consider enhancements to L1 to either
>> improve performance or remove one of the listed assumptions/requirements t
>o
>> provide a more powerfull solution over all.
>>
>> Another topic we should open up for discussion is what specific functional
>ity
>> do we need to provide to users?
>
> I think we may be suggesting similar topics. However, I wonder if
>those on this group, much less those it would/will take to build a
>"network", will be able to come to agreement on what a suitable network
>is. If we can't, how can we hope to jointly develop one? If we "let
>the market decide", can we expect to get anything more than slight
>iterations on what (little) we presently have?
>
>Glenn n6gn
>
The second topic is more of what features do we want to see in the
network (and maybe some we Don't want INSIDE the network)?

One way to address the question is to make a list each User Application
(aka Application the user is using packet radio for) and for each
Application list all the services it needs or could use from the network.

You then have a list of the requirements for the "ideal" network solution.

73, tom

43. Re: View towards the 21st Century

From: Tim Baggett <tim@NMSU.edu>
Date: Tue, 9 Aug 1994 13:19:19 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.87.9408091319.E20737-0100000@gauss>
Rendered body type: text/plain

On Tue, 9 Aug 1994, TAPR Network Special Interest Group wrote:

> From: kb7uv@panix.com (Andrew Funk)
> Subject: Re: View towards the 21st Century
> To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
> Date: Mon, 08 Aug 1994 17:20:31 -0400
>
>
> Howver, I do agree with you that we must be more farsighted in our outlook.
> We need to determine our goals for, say, the year 2001, and begin to work
> towards that goal.

Yes! Lets take what we have learned and apply it to something new.

>
> What do we want to see for Amateur Packet Radio in 2001?
>
> Well, here's my vision:
>
>   *   A nationwide high-speed "data pipe" network;
>
>   *   The network itself determines the best route for a given connection
>   or datagram to take;
>
>   *   The network designed for Inernational routing;
>
>   *   The network is "transparent" to other networking protocols (such as
>   TCP/IP);
>
>   *   The network is intelligently designed and managed to assure
>   performance;
>
>   *   All servers (PBBSs, WX Nodes, Convers Nodes, DX Clusters, game
>   servers, etc.) are accessed *through* the network, and don't
>   "compete" on the user channels;
>
>   *   User access to the network is "cellularized" to limit hidden
>   transmitters on the user channels;
>
>   *   High speed access to the network is available to users.
>

I agree Andy. I would add a network management protocol to the wish list.
I was very impressed with with TexNet network management scheme presented
at TAPR.

As an aside note regarding the 'cellularized' network to prevent hidden
transmitters: The university club has in the recent past implemented a 2
meter 1200 bps node that inter-connects to the 9600 backbone with good
results. The 2 meter 1200 bps frequency has been requested to be used only
for local area user access and not for any network linking of any kind.
This was intended to reduce hidden transmitters. So far the results have
been excellent. The users of the 1200 bps user port are once again happy
with their thru-put. They aren't moving real time video or anything, but
they're happy. My request would be to maintain the 9600 frequency as a
backbone only frequency and keep the users off this frequency.
Unfortunatly that is just one of those issues that we cannot coordinate
on as amateurs. My concern is that the 9600 frequency will develope to
many hidden node and then lose efficency.

I had hoped I could have implemented the node with some firmware that
would allow each protocol to be used independantly of the others.
Unfortunatly I couldn't get JNOS40 to work (anyone out there have any
luck with JNOS40 on a dataengine?) Currently the node is running G8BPQ
which is stable and runs great. It requires us to route ip over netrom
unfortunatly, and I wanted to avoid the extra overhead there. oh well.

> uses will continue to exist. Therefore I feel that we must explore lower
> overhead alternatives to TCP/IP for the network backbone.

I agree here too. A protocol with the most advantages with the least
overhead would be great. Unfortunatly the opposite seems true right now -
TCPIP has a lot of advantages but really has way too much overhead for
amateur data rates.

If anyone has any ideas/suggestions for a network management protocol,
feel free to email me (tim@nmsu.edu).

73
Tim

Tim Baggett, AA5DF | Countdown to Graduation: 129 days & counting
Las Cruces, New Mexico | "Ya want fries wid dat hamburger?"
                               |
New Mexico State University | "If you can't run with the big dogs,
Electrical Engineering Student | then stay on the porch"
----

44. Re:(2) View towards the 21st Century

From: tmoulton@ram.net
Date: Tue, 09 Aug 94 17:08:24 EDT
To: netsig@tcet.unt.edu
Message-ID: <05195.15021573@RAMail>
Rendered body type: text/plain

>From: net_sig@tcet.unt.edu
>Message-Id: <9408091841.AA114910@tcet.unt.edu>
>Subject: Re: View towards the 21st Century
>To: tmoulton@ram.net
>Date: Tue, 9 Aug 94 13:41:36 CDT
>Reply-To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
>
>From: Klarsen <klarsen@acca.nmsu.edu>
>Subject: Re: View towards the 21st Century
>To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
>Date: Tue, 9 Aug 1994 09:46:36 -0600 (MDT)
>
>
>   Since the arguement on this topic has dropped to just ROSE and
>P12 I want to make a few points. First, the theory of relativity was
>first seen in 1916 but it changes our life daily. So if you want to dam a
>software or hardware just because it's 5 years old, go ahaead and be stupid!
>
>
>   There are good reasons not to use a z-80 cpu at 4.003 MHz clock
>because this is slow by todays standards. You can still buy a speed-up
>kit for the tnc-2 that has a 10 MHz clock and IO chips to handle this
>speed. But even this may be slow in a large city. But a 10 MHz tnc-2 may
>be just the ticket for an area like West Texas where the ham population
>is low and little money is available.
>
>   For a city we need something that is fast and stable. To be fast
>it cannot have "hidden transmitters" and must handle a huge amount of
>traffic in the city. For this I suggest a bit-wise regenerator on n
>frequencies where n is an integer from 1 to ?. The switch software will
>be the OLD G8BPQ switch which has been tested at 56 kbaud.
>
>   There will NEVER be a packet radio network that covers the entire
>USA. This is a wonderful goal, but it is just too expensive. At this time
>we have the BBS Network that covers SOME of the USA. We have the Internet
>that covers SOME of the USA. And we have the Telephone Companies that
>cover ALL the USA. We can never have the resources of the telephone
>companies.
>
>   So now lets get back to the basics. How can we help cities build
>good packet radio networks. How can the town and country hams ever get
>things working to connect at ANY speed to a city?
>
>   Stop messing around with words. Let's DO something!
>
>-karl
>-k5di
>
>
>
Ok, We need some specifics.

What speeds do we want to run in the Big City? User Access? Backbone?

Let's pick a problem and Stick With It!

tom, w2vy

45. Re: View towards the 21st Century

From: "Gary McDuffie, Sr." <mcduffie@hannibal.wncc.cc.ne.us>
Date: Tue, 9 Aug 1994 15:43:55 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9408091533.A15590-0100000@hannibal>
Rendered body type: text/plain

On Tue, 9 Aug 1994, TAPR Network Special Interest Group wrote:

> From: Klarsen <klarsen@acca.nmsu.edu>
> Subject: Re: View towards the 21st Century
> To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
> Date: Tue, 9 Aug 1994 09:46:36 -0600 (MDT)

[some deleted]

> There are good reasons not to use a z-80 cpu at 4.003 MHz clock
> because this is slow by todays standards. You can still buy a speed-up
> kit for the tnc-2 that has a 10 MHz clock and IO chips to handle this
> speed.

Where is this speedup kit found? Is this a tapr item? I had not heard
of it until reading this.

> For a city we need something that is fast and stable. To be fast
> it cannot have "hidden transmitters" and must handle a huge amount of
> traffic in the city. For this I suggest a bit-wise regenerator on n
> frequencies where n is an integer from 1 to ?. The switch software will
> be the OLD G8BPQ switch which has been tested at 56 kbaud.

Could you help a non-city-slicker understand this "bit-wise regenerator"
and how it would be used on n frequencies?

> There will NEVER be a packet radio network that covers the entire
> USA. This is a wonderful goal, but it is just too expensive. At this time
> we have the BBS Network that covers SOME of the USA. We have the Internet
> that covers SOME of the USA. And we have the Telephone Companies that
> cover ALL the USA. We can never have the resources of the telephone
> companies.

THANK YOU!!! That has needed saying for a long time. I can never get it
through some peoples minds that those of us in Podunk will NEVER have the
system that people keep saying needs to be nationwide. There just isn't
enough population, read hams, read $$$. I'm told "upgrade the system",
"put in backbones". Yes, we will upgrade the system as time/money
permit. But no amount of time will allow us to put the same system in
that the Denver metro area could (but will they ever?). You are dead on
with that comment, Karl.

> So now lets get back to the basics. How can we help cities build
> good packet radio networks. How can the town and country hams ever get
> things working to connect at ANY speed to a city?

Now, that sounds like a dig to me, Karl. Let's not poke fun at those who
don't have much choice. Those of us in the "outback" aren't dumb, we
just don't have the resources to build a bigger system. The only nodes
in place are over 100 miles apart for many hops...and we don't have much
for mountains. We can barely keep a 1200 baud .01 system going, much
less multiple channel nodes with 4 radios feeding a tnc stack and a hexapus.

Keep up the good work, but don't think the whole system is going to
handle the same amount of traffic that the city types can support. It
won't happen.

Yes, I'm "listening in". I pick up ideas now and then that will allow me
to improve what network we have here.

> Stop messing around with words. Let's DO something!
> -karl
> -k5di

..and keep the rest of us informed, so that we can understand the steps
that we need to work TOWARD in improving what little we now have.

Gary - AG0N

46. Re:(2) View towards the 21st Century

From: srbible@cs.nps.navy.mil (Steven R. Bible)
Date: Tue, 9 Aug 94 22:31:23 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <9408100531.AA13910@taurus.cs.nps.navy.mil>
Rendered body type: text/plain

>>From: Klarsen <klarsen@acca.nmsu.edu>
>>Subject: Re: View towards the 21st Century
>>To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
>>Date: Tue, 9 Aug 1994 09:46:36 -0600 (MDT)
>>
>>
>> Since the arguement on this topic has dropped to just ROSE and
>>P12 I want to make a few points. First, the theory of relativity was
>>first seen in 1916 but it changes our life daily. So if you want to dam a
>>software or hardware just because it's 5 years old, go ahaead and be stupid!

A quote from Seymour Cray, Public Lecture at Lawrence Livermore Laboratories

on the Introduction of the CRAY-1 (1976)

    "...Those three [speaking about the Illiac-IV, the CDC Star machine, and the TI ASC machine] were all pioneering machines....One of the problems of being a pioneer is you always make mistakes and I never, never want to be a pioneer. It's always best to come second when you can look at the mistakes the pioneers made."

Are we pioneers or are we going to come in second? We can learn from the other systems that exists today, both in the amateur and commerical world. We should look towards the benefits and lessons learned from each. There are some hard working people out there that are trying to be pioneers and instead of receiving constructive criticism they receive flames (arrows in the back). So it appears that the discussion can go three directions: 1) how do we do with what we have, 2) how do we improve with what we have, or 3) start from scratch. We stand a better chance of numbers 1 and 2, however 3 should be explored, even a balance of 2 and 3.

What are the issues we are trying to address? Could we catorgorize them and list the pros and cons of each? For example:

AX.25

Good points: simple, present standard,...
Bad points: hidden transmitter effect, only standard for third party traffic,...

LAYER 3

Good points: several flavors: ROSE, NETROM, THENET, TCP/IP,...
Bad points: lack of a standard interface, lack of an applications interface,...

ROSE

TCP/IP

TheNet

NETROM

And so on...

I could go back to the last four or five times in the last 10 years that this discussion has been raised and fill in the blanks. We need to list these so that the newcomers can get up to speed when this discussion comes around the sixth time :-). Seriously, I'll even keep track and post a summary if everyone would list (objectively) the good and bad points that each aspect of amateur packet radio has to offer. Then might we narrow the discussion to each of these aspects and design a solution? Or am I just reinventing the wheel?

I remain optimistic ;-).

Steve, N7HPR

srbible@cs.nps.navy.mil
Naval Postgraduate School, Monterey, CA 93943

47. Re:(2) View towards the 21st Century

From: tmoulton@ram.net
Date: Wed, 10 Aug 94 09:21:52 EDT
To: netsig@tcet.unt.edu
Message-ID: <05198.15021573@RAMail>
Rendered body type: text/plain

>From: net_sig@tcet.unt.edu
>Message-Id: <9408100330.AA133485@tcet.unt.edu>
>Subject: Re: View towards the 21st Century
>To: tmoulton@ram.net
>Date: Tue, 9 Aug 94 22:30:55 CDT
>Reply-To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
>
>From: "Gary McDuffie, Sr." <mcduffie@hannibal.wncc.cc.ne.us>
>Subject: Re: View towards the 21st Century
>To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
>Date: Tue, 9 Aug 1994 15:43:55 -0600 (MDT)

>
>
>
>
>On Tue, 9 Aug 1994, TAPR Network Special Interest Group wrote:
>
>> From: Klarsen <klarsen@acca.nmsu.edu>
>> Subject: Re: View towards the 21st Century
>> To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
>> Date: Tue, 9 Aug 1994 09:46:36 -0600 (MDT)
>
>[some deleted]
>
>>   There are good reasons not to use a z-80 cpu at 4.003 MHz clock
>> because this is slow by todays standards. You can still buy a speed-up
>> kit for the tnc-2 that has a 10 MHz clock and IO chips to handle this
>> speed.
>
>Where is this speedup kit found? Is this a tapr item? I had not heard
>of it until reading this.
>
I know PacComm has speedup kits for Tiny-2's (TNC-2 Clone) They should
also have the info for TNC-2's. (813) 874-2980 or (800) 486-7388.

>>   For a city we need something that is fast and stable. To be fast
>> it cannot have "hidden transmitters" and must handle a huge amount of
>> traffic in the city. For this I suggest a bit-wise regenerator on n
>> frequencies where n is an integer from 1 to ?. The switch software will
>> be the OLD G8BPQ switch which has been tested at 56 kbaud.
>
>Could you help a non-city-slicker understand this "bit-wise regenerator"
>and how it would be used on n frequencies?
>
>>   There will NEVER be a packet radio network that covers the entire
>> USA. This is a wonderful goal, but it is just too expensive. At this time
>> we have the BBS Network that covers SOME of the USA. We have the Internet
>> that covers SOME of the USA. And we have the Telephone Companies that
>> cover ALL the USA. We can never have the resources of the telephone
>> companies.
>
>THANK YOU!!! That has needed saying for a long time. I can never get it
>through some peoples minds that those of us in Podunk will NEVER have the
>system that people keep saying needs to be nationwide. There just isn't
>enough population, read hams, read $$$. I'm told "upgrade the system",
>"put in backbones". Yes, we will upgrade the system as time/money
>permit. But no amount of time will allow us to put the same system in
>that the Denver metro area could (but will they ever?). You are dead on
>with that comment, Karl.

We don't want one that covers all the valleys, but we do want one that
has connectivity to all the populated areas... even if in some cases
the links into the area are only 1200/2400 baud.
>
>>   So now lets get back to the basics. How can we help cities build
>> good packet radio networks. How can the town and country hams ever get
>> things working to connect at ANY speed to a city?
>
>Now, that sounds like a dig to me, Karl. Let's not poke fun at those who
>don't have much choice. Those of us in the "outback" aren't dumb, we
>just don't have the resources to build a bigger system. The only nodes
>in place are over 100 miles apart for many hops...and we don't have much
>for mountains. We can barely keep a 1200 baud .01 system going, much
>less multiple channel nodes with 4 radios feeding a tnc stack and a hexapus.

In many cases just two tnc's/radios with a simple cable between them
would help the performance of the long links... even if they both
were on 2m... any frequency reuse is better than none.
>
>Keep up the good work, but don't think the whole system is going to
>handle the same amount of traffic that the city types can support. It
>won't happen.
>
>Yes, I'm "listening in". I pick up ideas now and then that will allow me
>to improve what network we have here.
>
>>   Stop messing around with words. Let's DO something!
>> -karl
>> -k5di
>

>..and keep the rest of us informed, so that we can understand the steps
>that we need to work TOWARD in improving what little we now have.
>
>Gary - AG0N
>
>
tom, w2vy

48. X1J buffer troubles.

From: mfoster@amoco.com (Michael H. Foster)
Date: Wed, 10 Aug 94 11:13:17 CDT
To: netsig@tcet.unt.edu
Message-ID: <9408101613.AA18495@gp3.trc.amoco.com>
Rendered body type: text/plain

More information on losing buffer space.....

While tracking the level 4 stuff between two X1J's, I noticed that the second
x1j was not responding to the netrom connect from the first x1j's request.
The buffers were sufficiently high that the node did not return a "node busy".

While the first x1j was still trying to connect, I sent a digipeated
connect thru it to the second x1j.

The connect was immediate. Using the "stats" command on the digipeated path
to the second x1j, I could see the "L4 recvd" bumping each time
the netrom connect hit it. The "L4 sent" of course was zero, consistent
with nothing coming back from the second x1j.

Each time a netrom connect hit the second x1j, the buffer count would drop.
By doing this enough the buffers would get wiped out.

I don't know why the second x1j would not respond to the connect yet. Perhaps
some tweaking with the level 4 parms will be the answer.

Hope this helps ...

Mike,wa5txx
mfoster@amoco.com

49. Re: View towards the 21st Century

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Wed, 10 Aug 1994 08:52:14 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9408100734.A27121-0100000@kazak>
Rendered body type: text/plain

On Tue, 9 Aug 1994, TAPR Network Special Interest Group wrote:

> From: "Gary McDuffie, Sr." <mcduffie@hannibal.wncc.cc.ne.us>
> Subject: Re: View towards the 21st Century
> To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
> Date: Tue, 9 Aug 1994 15:43:55 -0600 (MDT)
>
>
>
>
> On Tue, 9 Aug 1994, TAPR Network Special Interest Group wrote:
>
> > From: Klarsen <klarsen@acca.nmsu.edu>
> > Subject: Re: View towards the 21st Century
> > To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
> > Date: Tue, 9 Aug 1994 09:46:36 -0600 (MDT)
>
> [some deleted]
>
> >   There are good reasons not to use a z-80 cpu at 4.003 MHz clock
> > because this is slow by todays standards. You can still buy a speed-up
> > kit for the tnc-2 that has a 10 MHz clock and IO chips to handle this
> > speed.
>
> Where is this speedup kit found? Is this a tapr item? I had not heard
> of it until reading this.

        The speed-up kit is from Pac_Comm and it includes all you need to
run 10 MHz. They can be reached mon-fri at 1-800-486-7388 and the kit
costs $25.00 and I think it a good price.

> >   There will NEVER be a packet radio network that covers the entire

> > USA. This is a wonderful goal, but it is just too expensive. At this time
> > we have the BBS Network that covers SOME of the USA. We have the Internet
> > that covers SOME of the USA. And we have the Telephone Companies that
> > cover ALL the USA. We can never have the resources of the telephone
> > companies.
>
> THANK YOU!!! That has needed saying for a long time. I can never get it
> through some peoples minds that those of us in Podunk will NEVER have the
> system that people keep saying needs to be nationwide. There just isn't
> enough population, read hams, read $$$. I'm told "upgrade the system",
> "put in backbones". Yes, we will upgrade the system as time/money
> permit. But no amount of time will allow us to put the same system in
> that the Denver metro area could (but will they ever?). You are dead on
> with that comment, Karl.

        Well I live in the boonies too. NM is not a rich state and the
ham population is small in much of the state. The current bbs network is
a number of 1200 baud simplex nodes that are on 145.01 and interfer with
each other more than pass traffic. It is all we can afford. Unless
someone is going to give us $50,000.00 the network in NM will change very
little from now to the year 2000.

>
> >   So now lets get back to the basics. How can we help cities build
> > good packet radio networks. How can the town and country hams ever get
> > things working to connect at ANY speed to a city?
>
> Now, that sounds like a dig to me, Karl. Let's not poke fun at those who
> don't have much choice. Those of us in the "outback" aren't dumb, we
> just don't have the resources to build a bigger system. The only nodes
> in place are over 100 miles apart for many hops...and we don't have much
> for mountains. We can barely keep a 1200 baud .01 system going, much
> less multiple channel nodes with 4 radios feeding a tnc stack and a hexapus.

        I am dig'ing myself more than you....

> Keep up the good work, but don't think the whole system is going to
> handle the same amount of traffic that the city types can support. It
> won't happen.
>
> Yes, I'm "listening in". I pick up ideas now and then that will allow me
> to improve what network we have here.
>
> >   Stop messing around with words. Let's DO something!
> > -karl
> > -k5di
>
> ..and keep the rest of us informed, so that we can understand the steps
> that we need to work TOWARD in improving what little we now have.
>
> Gary - AG0N
>
>
        Keep working Gary. Someday a guy will organize Denver and they
will put a good system you can reach...
-karl
-k5di

50. Re: 9600 bps data randomization question

From: Jeff King <wb8wka@wb8wka.ampr.org>
Date: Wed, 10 Aug 94 19:25:52 UTC
To: netsig@tcet.unt.edu
Message-ID: <2264@wb8wka.ampr.org>
Rendered body type: text/plain

> I wonder if the time constand could be varied - fast (< 8 bit times)
> while the clock recovery PLL is out of lock, and slow (> 16 bit times)
> when in lock.

>-adrian

Check out some of the MX-COM parts, they implement excactly what you
propose. I understand(?) the DRSI 9600 modem uses this part however
I'm told they don't take advantage of the variable loop constants
the PLL offers.

-Jeff

51. Re: 9600 bps data randomization question

From: Adrian Godwin <agodwin@acorn.co.uk>
Date: Thu, 11 Aug 1994 09:51:51 +0100
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <9408110851.AA05120@snark.acorn.co.uk>
Rendered body type: text/plain

> From: Jeff King <wb8wka@wb8wka.ampr.org>

> Check out some of the MX-COM parts, they implement excactly what you
> propose. I understand(?) the DRSI 9600 modem uses this part however
> I'm told they don't take advantage of the variable loop constants
> the PLL offers.
>

Yes, I've got data on the FX489/589, and to some extent it gave rise to the question. It's possible that DRSI didn't take advantage of this feature (is that the chip they use?) because it would put extra constraints on the TNC at the other end of the link - the modem assumes that it will receive a clock-synching burst just after the squelch opens and preceding the leading flag. Although I understand that some TNCs can do this, it isn't universal.

The slicer does use peak detectors, so it may well be able to manage to set itself up given a sequence of flags rather than the 50% duty cycle synch burst if the time constants are adjusted. Perhaps it was difficult to start the sequence off given no RSSI input - you need some sort of data recovery before you can get DCD, and it may be difficult to get enough correct data transitions while the slicing level is way off.

This is all triggered by RSSI in the FX489, and I think Glenn's comments implied he'd done the same thing in his radios. The environment in which an amateur voice-channel modem is used is usually minimal mods to an existing radio and often doesn't provide this, though a squelch circuit might do well enough. I appreciate that a custom radio is better still, but if you're prepared to go to that expense there's less need to engineer for a 25kHz channel in any case.

-adrian

52. Re: View towards the 21st Century

From: Adrian Godwin <agodwin@acorn.co.uk>
Date: Thu, 11 Aug 1994 10:04:26 +0100
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <9408110904.AA05144@snark.acorn.co.uk>
Rendered body type: text/plain

> From: Tim Baggett <tim@NMSU.edu>
>
> I agree here too. A protocol with the most advantages with the least
> overhead would be great. Unfortunatly the opposite seems true right now -
> TCPIP has a lot of advantages but really has way too much overhead for
> amateur data rates.
>

Low overhead isn't just a matter of small header size, though - if you have slow key-up and clock synch times, as we tend to on physical systems with very low data rates, the overhead of an extra ACK can be a great deal worse than extra bytes in the header.

And higher level fixes to sort out lower-level limitations can also add to thge total traffic, so you've got to consider more than just the link protocol if you want efficiency out of low-speed links. It's too easy to optimise just one part of the system without considering the effects overall.

-adrian

53. Re: View towards the 21st Century

From: Tim Baggett <tim@NMSU.edu>
Date: Thu, 11 Aug 1994 20:40:50 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.87.9408112050.A15804-0100000@gauss>
Rendered body type: text/plain

On Thu, 11 Aug 1994, TAPR Network Special Interest Group wrote:

> From: Adrian Godwin <agodwin@acorn.co.uk>

> Subject: Re: View towards the 21st Century
> To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
> Date: Thu, 11 Aug 1994 10:04:26 +0100

> > I agree here too. A protocol with the most advantages with the least
> > overhead would be great. Unfortunatly the opposite seems true right now -
> > TCPIP has a lot of advantages but really has way too much overhead for
> > amateur data rates.
>
> Low overhead isn't just a matter of small header size, though - if you
> have slow key-up and clock synch times, as we tend to on physical systems
> with very low data rates, the overhead of an extra ACK can be a great
> deal worse than extra bytes in the header.

Yeah, that is a VERY good point to bring up Adrian! And as amateurs move
to even faster datarates the T/R switching time can easily become a
significant amount of time to transmit the packet.

Thinking of the TX Delay in this case specifically:
I'm using a TEKK radio and a Kantronics D4-10 here. I ran some tests in
the lab and determined that a TX delay of 50 mS to be satisfactory. I
believe however that the results may have been skewed a little because of
the proximity of the radios. The transmitting of the D4-10 to the TEKK
with 80 db of pad on the input to the TEKK still caused the receiving
modem to take a bit of time to 'sync' up. Anyone have any TXD values they
use with these radios? At 9600 bps, 50 mS seems pretty significant. I
have heard the D4-10 can go extremly low for a TXD.

>
> And higher level fixes to sort out lower-level limitations can also add
> to thge total traffic, so you've got to consider more than just the link
> protocol if you want efficiency out of low-speed links. It's too easy
> to optimise just one part of the system without considering the effects
> overall.

Yeah, I was focusing too much on the network and transport layers, hihi!
We need to work on the physical layer as well to improve efficency.

73
Tim

Tim Baggett, AA5DF | Countdown to Graduation: 127 days & counting
Las Cruces, New Mexico | "Ya want fries wid dat hamburger?"
                               |
New Mexico State University | "If you can't run with the big dogs,
Electrical Engineering Student | then stay on the porch"
---

54. Re:(2) View towards the 21st Century

From: tmoulton@ram.net
Date: Fri, 12 Aug 94 07:18:26 EDT
To: netsig@tcet.unt.edu
Message-ID: <05215.15021573@RAMail>
Rendered body type: text/plain

>From: net_sig@tcet.unt.edu
>Message-Id: <9408120221.AA175610@tcet.unt.edu>
>Subject: Re: View towards the 21st Century
>To: tmoulton@ram.net
>Date: Thu, 11 Aug 94 21:21:07 CDT
>Reply-To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
>
>From: Adrian Godwin <agodwin@acorn.co.uk>
>Subject: Re: View towards the 21st Century
>To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
>Date: Thu, 11 Aug 1994 10:04:26 +0100
>
>
>> From: Tim Baggett <tim@NMSU.edu>
>>
>> I agree here too. A protocol with the most advantages with the least
>> overhead would be great. Unfortunatly the opposite seems true right now -
>
>> TCPIP has a lot of advantages but really has way too much overhead for
>> amateur data rates.
>>
>
>Low overhead isn't just a matter of small header size, though - if you

>have slow key-up and clock synch times, as we tend to on physical systems
>with very low data rates, the overhead of an extra ACK can be a great
>deal worse than extra bytes in the header.
>
>And higher level fixes to sort out lower-level limitations can also add
>to thge total traffic, so you've got to consider more than just the link
>protocol if you want efficiency out of low-speed links. It's too easy
>to optimise just one part of the system without considering the effects
>overall.
>
>-adrian
>
>
I am brought back to my earlier request...

Let's pick a topology and examine it's performance and see what we can do
to improve it. We also should consider some real performance measurements.

55. Re: View towards the 21st Century

From: ssampson@sabea-oc.af.mil (Steve Sampson)
Date: Tue, 16 Aug 1994 05:39:12 -0500 (CDT)
To: netsig@tcet.unt.edu
Cc: ssampson@sabea-oc.af.mil (Steve Sampson;DOD)
Message-ID: <9408161039.AA13094@sabea-oc.af.mil>
Rendered body type: text/plain

In the July 1994 Byte Magazine was an article by Dick Pountain
(53), which is mean't to be an introduction to the Taos
Operating System. Currently it is 12k (which fits well on an 8
bit microcomputer or microcontroller). The art work by Steve
Keller shows the humanoid OS reining several processors in, and
pulling together to acheive work. Guess he could have used
horses, but that would be pass'e.

The part that sounds interesting to me, is the parallel
processing power. Maybe Unix nodes (or simulations) sending
email or files is one area of amateur interest, but there seems
to be a need for something different. One of the traps we fall
into, is that we must cover a large territory to be considered a
network. But I think a core of users who exist mainly to benefit
each other (and do not wish to reach, or bring in, the masses)
is also an interesting concept.

Dr. Dobbs, many years ago, had a design contest (or maybe it was
just a challenge) to find an use for all the CP/M machines
laying around after the PC took over. I don't remember if they
ever came up with a plan, but the recent feat of factoring two
prime numbers (of hundreds of digits) to break a cryptogram
would have been a good use (Dobbs readers like cryptology). The
idea was to take the CP/M boxes and link them together with a
modem. Then the master would dial up each machine and issue a
task. When complete, the slave would dial up the master with its
report or return value. Conceptually, it would probably take all
day (maybe weeks) to do the work issued.

The amateur satellites also fit this (email machine) model. The
breakthrough design of Microsat (small is beautiful) is to be
given up for a huge monstrosity that sits (like a miser) over
the country. On the other hand the Gates satellite system takes
the Microsat to greater power. Here, a constellation will join
in an orbiting network to share the load and achieve the common
goal. This is slightly more complex, in that the satellites not
only must hold their own main program, they must network. But
not in the way we do now. The cellular radio model is flipped.
Instead of the user moving around, the satellite moves around
and the user is relatively motionless. The satellite can handle
data or voice.

I'm watching those spread spectrum ads in the trade magazines,
and it looks like they will be affordable in the very near
future. That will allow the average home to erect a dipole and
network using 1 Watt with other homes in the neighborhood - and
then beyond. "What's your phone number? It's Ethernet
C31075A4B811 on channel 4105" :-) Now there's a networking
challenge. But rather than needing a Unix box, it needs only the
tools to pass data from one PRN (Pseudo Random Number) address,
to another, and route the data to the phone, fax, or computer.
A parallel process in the big switching code of the total
neighborhood (party line? of course, just like repeaters).

--
Steve

56. Re: Let's Get to Work!

From: Bdale Garbee <bdale@hipshack.gag.com>
Date: Thu, 18 Aug 1994 03:08:25 -0600
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <199408180908.DAA00447@hipshack.gag.com>
Rendered body type: text/plain

: However, I wonder if those on this group, much less those it would/will take
: to build a "network", will be able to come to agreement on what a suitable
: network is.

While I hate to be perceived as a pessimist, I have believed ever since the Sunday discussion at the CNC here in Colorado Springs that I moderated that this level of agreement is highly unlikely.

In large part, it's a financial problem. Some folks think about what they'd like to have when they're done implementing, get frustrated about how much time and money it would take to implement, and never get anything done. Some folks think about the kinds of resources they have, derive from that what sort of "network" they can afford the time and money to build, do it, and then get defensive about how much stuff they can get done with 1200 and 9600 baud links anytime anyone starts talking about faster/better networks. Lots of areas fall somewhere in between.

But, finding some sort of middle ground that excites anyone will be really tough.

: If we can't, how can we hope to jointly develop one?

This is a really good question. I guess I'd like to hope for a synergistic approach, where a discussion forum like this becomes a place for people to talk about what they're doing, not what they think someone else should do. If this happens, then folks who aren't active might see by what other folks are working on where some hole is that they want to go fill.

If everyone brings something to the table, even if we have differing goals and budgets, I bet that over time enough pieces will emerge that by cutting and pasting the available building blocks to generate local solutions, a lot of value will have been exchanged.

73 - Bdale, N3EUA, http://www.gag.com/

ps:

My personal energy is very focussed on the AMSAT Phase 3D GPS package right now, but for those who sent email asking, I promise I'll package up some documentation on what we did to build UHF 9600 baud repeaters around Mitrek, TAPR, and Gracilis hardware sometime in the next month or so, and put it out on the net for all to grab.

57. Re: Let's Get to Work!

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Fri, 19 Aug 1994 08:05:37 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9408190704.C13158-0100000@kazak>
Rendered body type: text/plain

On Thu, 18 Aug 1994, TAPR Network Special Interest Group wrote:

> From: Bdale Garbee <bdale@hipshack.gag.com>
> Subject: Re: Let's Get to Work!
> To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
> Date: Thu, 18 Aug 1994 03:08:25 -0600
>

> : If we can't, how can we hope to jointly develop one?
>
> This is a really good question. I guess I'd like to hope for a synergistic
> approach, where a discussion forum like this becomes a place for people to
> talk about what they're doing, not what they think someone else should do. If
> this happens, then folks who aren't active might see by what other folks are
> working on where some hole is that they want to go fill.
>
> If everyone brings something to the table, even if we have differing goals
> and budgets, I bet that over time enough pieces will emerge that by cutting

> and pasting the available building blocks to generate local solutions, a lot
> of value will have been exchanged.
>
> 73 - Bdale, N3EUA, http://www.gag.com/
>

I was sorry to splash ice water on this sig and say the obvious;
we hams will not compete with the telephone companies. But I took a piece
of Bdale's work and think it is EXACTLY what this sig can and should do.
I can contribute to this kind of program. It might help another ham
trying to do the same thing.

The key words are goals and budget. These are real, and can be
verified. We can work with this kind of information. If, as was expressed
earlier that this forum is for planning what to do in the years begining
with 2000, I suggest this is pissing up a rope. Loads of words but all
you really get done is wet fingers...hi

73, de karl k5di

58. Using a DE-1200 for a Digital Repeater

From: bdale@gag.com (Bdale Garbee)
Date: Tue, 23 Aug 1994 17:59:54 -0600
To: netsig@tcet.unt.edu
Message-ID: <199408232359.RAA06393@winfree.gag.com>
Rendered body type: text/plain

I'm slowly working on putting some of my previously-published articles and
papers up on the Web. The first one that is available, because it was the
first one I found (!), is the article I did for TAPR PSR on how to modify
a Kantronics DE-1200 for repeater usage. If you'd like to troll, it's now
available as:

http://www.gag.com/papers/tapr_1200_rptr.html

73 - Bdale, N3EUA, http://www.gag.com/

59. Mitrek Radio Mods

From: bdale@gag.com (Bdale Garbee)
Date: Wed, 24 Aug 1994 10:47:45 -0600
To: netsig@tcet.unt.edu
Message-ID: <199408241647.KAA09353@winfree.gag.com>
Rendered body type: text/plain

I've just finished my first cut at documenting the mods we've made here in
Colorado Springs to Motorola Mitrek VHF and UHF radios, both for repeater
operation, and for 9600 baud packet use. We've built both VHF and UHF voice
repeaters, a 1200 baud VHF repeater, a UHF 9600 baud repeater, and several
simplex 9600 baud UHF stations using these mods. Comments are welcome.

http://www.gag.com/papers/mitrek.html

73 - Bdale, N3EUA, http://www.gag.com/

60. Re: Mitrek Radio Mods

From: David Bashaw <dbashaw@synoptics.com>
Date: Wed, 24 Aug 94 12:35:00 PDT
To: netsig@tcet.unt.edu
Message-ID: <9408241935.AA14563@rimbaud>
Rendered body type: text/plain

>From: bdale@gag.com (Bdale Garbee)
>Subject: Mitrek Radio Mods
>
>   http://www.gag.com/papers/mitrek.html
>
>73 - Bdale, N3EUA, http://www.gag.com/

Pardon my monumental ignorance - what is http://

??????????????????????????

Dave Bashaw
wa6qwl

61. Re: Mitrek Radio Mods

From: n3kfh@centrum.is (Don Dietz)
Date: Wed, 24 Aug 1994 23:24:53 +0000

To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <199408242332.XAA12270@plaza.centrum.is>
Rendered body type: text/plain

>From: David Bashaw <dbashaw@synoptics.com>
>Subject: Re: Mitrek Radio Mods
>To: netsig@tcet.unt.edu
>Date: Wed, 24 Aug 94 12:35:00 PDT
>
>
>>From: bdale@gag.com (Bdale Garbee)
>>Subject: Mitrek Radio Mods
>>
>>   http://www.gag.com/papers/mitrek.html
>>
>>73 - Bdale, N3EUA, http://www.gag.com/
>
>Pardon my monumental ignorance - what is http://
>
>??????????????????????
>
>Dave Bashaw
>wa6qwl
>
Well, Dave, I'm sure that you're not the only one! Hi Hi! ;-)
I do know that all of this address is use for the World Wide Web, a
hypertext like, Internet wide search tool. I have used it from a Windows
3.1 program called Mosaic. Mosaic itself works through Trumpet for Windows,
which is a Windows socket (program) that sets up a SLIP/PPP connection with
an Internet service provider. As far as I know, that is the only way to get
the use of the WWW. I couldn't use it, at least that I know of, from my
other VT-100 emulation connection.

Anyway, I also don't know the definitions for what http means, or for that
matter, exactly what a URL is! I do know that it basically an address
because if I enter this http... thing in the URL box in Mosaic, that the
program will connect me to the information server, and that specific
information for which I am searching.

I hope this helps your understanding, and I hope some else will help put
some real definitions behind these terms.

73 de Don

62. Re: Mitrek Radio Mods

From: bruce@pixar.com (Bruce Perens)
Date: Wed, 24 Aug 94 17:36 PDT
To: bruce@pixar.com,
        "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <m0qdSna-0007ncC@mongo.pixar.com>
Rendered body type: text/plain

>From: David Bashaw <dbashaw@synoptics.com>
> Pardon my monumental ignorance - what is http://

Bdale, please put it up for FTP when you have a chance as these guys
who use DOS computers (only kidding Dave) don't have access to World
Wide Web browsers like Mosaic.

Bdale, Glenn Elmore once commented that he found the Mitrek receiver
to be less linear across its band width than one might desire for
9600 operation. You haven't had to cut out any filters, etc? What's the
bit-error-rate like for your users, and what are they using?

        Thanks

        Bruce Perens AB6YM

63. Re: Mitrek Radio Mods

From: Bob Wilkins <rwilkins@ccnet.com>
Date: Wed, 24 Aug 1994 19:20:07 -0700 (PDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9408241903.A26144-0100000@ccnet>
Rendered body type: text/plain

On Wed, 24 Aug 1994, TAPR Network Special Interest Group wrote:

> From: bruce@pixar.com (Bruce Perens)
> Subject: Re: Mitrek Radio Mods

> To: bruce@pixar.com,
> Date: Wed, 24 Aug 94 17:36 PDT
>
> >From: David Bashaw <dbashaw@synoptics.com>
> > Pardon my monumental ignorance - what is http://
>
> Bdale, please put it up for FTP when you have a chance as these guys
> who use DOS computers (only kidding Dave) don't have access to World
> Wide Web browsers like Mosaic.

Some unix sites have a www text based browser that works quite well.

Try the   lynx   tool.   lynx might even work on 9.6k amateur links ;)

Bob

     Bob Wilkins   work   bwilkins@cave.org
 Berkeley, California   home   rwilkins@ccnet.com
     94701-0710   play   n6fri@n6eeg.#nocal.ca.usa.noam

64. Re: http

From: broderic@codger.physics.duq.edu (Don Broderick [N3GUZ])
Date: Thu, 25 Aug 1994 09:54:09 -0400 (EDT)
To: netsig@tcet.unt.edu
Message-ID: <9408251354.AA11452@codger.physics.duq.edu>
Rendered body type: text/plain

>
> From: n3kfh@centrum.is (Don Dietz)
> Subject: Re: Mitrek Radio Mods
> To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
> Date: Wed, 24 Aug 1994 23:24:53 +0000
>
> >From: David Bashaw <dbashaw@synoptics.com>
> >Subject: Re: Mitrek Radio Mods
> >To: netsig@tcet.unt.edu
> >Date: Wed, 24 Aug 94 12:35:00 PDT
> >
> >
> >>From: bdale@gag.com (Bdale Garbee)
> >>Subject: Mitrek Radio Mods
> >>
> >>   http://www.gag.com/papers/mitrek.html
> >>
> >>73 - Bdale, N3EUA, http://www.gag.com/
> >
> >Pardon my monumental ignorance - what is http://
> >
> >??????????????????????????
> >
> >Dave Bashaw
> >wa6qwl
> >
> Well, Dave, I'm sure that you're not the only one! Hi Hi! ;-)
> I do know that all of this address is use for the World Wide Web, a
> hypertext like, Internet wide search tool. I have used it from a Windows
> 3.1 program called Mosaic. Mosaic itself works through Trumpet for Windows,
> which is a Windows socket (program) that sets up a SLIP/PPP connection with
> an Internet service provider. As far as I know, that is the only way to get
> the use of the WWW. I couldn't use it, at least that I know of, from my
> other VT-100 emulation connection.
>
> Anyway, I also don't know the definitions for what http means, or for that
> matter, exactly what a URL is! I do know that it basically an address
> because if I enter this http... thing in the URL box in Mosaic, that the
> program will connect me to the information server, and that specific
> information for which I am searching.
>
> I hope this helps your understanding, and I hope some else will help put
> some real definitions behind these terms.

Your glossary:

html-   "Hyper Text Markup Language", a subset of "Standard Generalized Markup
        Language" (SGML), is a way of formating a document by adding simple
        commands within the text. HTML documents, often refered to as
        simply "hypertext" documents, are named such because of their ability
        to include more than text. Still pictures, audio, sound, movies,
        three dimentional models, as well as other services, may be included

```
        using html. HTML documents may be viewed by programs such as mosaic,
        lynx, and cello. Documents can also be linked to one another by
        hypertext references, usually in the form of a URL.

example of a simple hypertext document:

<title>My first html page</title>
<h3>This is a heading of the third magnitude</h3>
<ul>An unordered list follows</ul>
<li>First entry
<li>Second entry
<li>Third entry
</ul>
<a href="gopher://gopher.duq.edu/1">gopher server</a>
<address>broderic@codger.physics.duq.edu</address>

        The second to the last line in this short example is a hypertext
        reference to another URL.

URL:    Uniform Reference Locator. Each document on the World Wide Web may
        be located, or referenced, by its URL. The URL carries information
        about the prefered transfer method, which host the document lives
        on, the location of the document, and its type. The typical form
        of a URL is:

        service://this.is.my.address/path.type

        where:
                service -> The transfer method (http, ftp, gopher, telnet, etc.)
this.is.my... -> The domain name of the host where the document                                 lives.
                path -> The path to the document, referenced either from the
                        server root or a user's home html directory. (Dos
                        users should note: unix uses / rather than \ as
                        a separator in the path.)
                type -> Although I don't believe this to be required, most
                        WWW browsers (such as mosaic or lynx) use this info
                        to decide how to render the document. This is
                        especially the case where this is .html or is missing.

        An example of a URL might be:

                http://codger.physics.duq.edu/physics/home.html

All of these things are building blocks for the World Wide Web, written as
WWW or W3.

As you can see from the short html example above, this small amount of text
could easily be transfered in one short packet. There shouldn't be any
problem using these techniques over amateur packet radio.

---- I'm not defining a protocol here, rather hope this brief overview is
        helpful. For more information, I'd suggest that you surf the web
        for yourself!!!

db
```

65. RE: Mitrek Radio Mods

```
From: "Frank Alwine" <falwine@VNET.IBM.COM>
Date: Thu, 25 Aug 94 09:53:41 EDT
To: netsig@tcet.unt.edu
Message-ID: <9408251359.AA158797@tcet.unt.edu>
Rendered body type: text/plain
```

I hope some kind soul will post these to an ftp site somewhere, too...
It's not just the poor DOS slobs :-) that can't access Web sites - we
who suffer behind ancient Internet firewalls can't access them, either!
(but they tell us that will change any day now....sure.....)

73 de Frank N1GPY   falwine@vnet.ibm.com   n1gpy@n1gpy.#nwvt.vt.usa

66. Re: Mitrek Radio Mods

```
From: "W. M Wood - The Signal Group" <mikewood@mercury.interpath.net>
Date: Thu, 25 Aug 1994 10:35:26 -0400
To: mikewood@mercury.interpath.net, netsig@tcet.unt.edu
Message-ID: <199408251435.KAA01506@mercury.interpath.net>
Rendered body type: text/plain
```

Ask your service provider / system admin. to install a program
called Lynx you can then surf WWW with any ascii based comm. program

or terminal.
73,

Mike Wood   Internet: mikewood@mercury.interpath.net
The Signal Group   Amateur Radio: NT4O
P.O. Box 1979   ***Avoid company disclaimers by owning the company ***
Wake Forest, NC 27588

Phone: 919-556-8477   Fax: 919-556-0115

67. Re: Mitrek Radio Mods

From: Bdale Garbee <bdale@hipshack.gag.com>
Date: Thu, 25 Aug 1994 08:53:49 -0600
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <199408251453.IAA02146@hipshack.gag.com>
Rendered body type: text/plain

TAPR Network Special Interest Group (net_sig@tcet.unt.edu) wrote:
: Bdale, please put it up for FTP when you have a chance as these guys
: who use DOS computers (only kidding Dave) don't have access to World
: Wide Web browsers like Mosaic.

Hmmm. There are both practical and philosophical issues here, Bruce.

The documents are written in HTML, with schematics (where appropriate) as Postscript images. Putting them out for FTP wouldn't do very much good. I'm sorry if this inconveniences some possible readers... but learning how to deal with the Web is a "good thing".

For those in the audience who were asking questions about URL's... To explain a bit, 'http' stands for 'hyper-text transfer protocol'. It is used to move HTML documents around, where HTML is the hyper-text markup language. There's a daemon called httpd that serves http connections, and you will find them all over the net these days. A typical user interface for dealing with HTML documents is 'Mosaic', which is available on a variety of platforms. There is also lynx, which is a text-only browser (sufficient for the base articles here, won't deal well with the schematics), and things like cello for Dos/Windoze. Thus, a URL (universal resource locator) that starts with http uses the http protocol. One that starts with ftp uses the ftp protocol, and so on. For example, the network map of CODE sites in Colorado is available as

        ftp://winfree.gag.com/packet/code/network.map

If you're using an interface like Mosaic, you just stuff this into the popup behind the 'File/Open URL' menu pick. If you're using a traditional ftp interface, you manually parse this into 'use ftp to connect to winfree.gag.com and look in the packet/code subdirectory for network.map'.

Personally, I think http is something we could use more of in the amateur service. Text-only objects can be quite efficiently transferred in terms of bandwidth per unit of usefullness.

In any case, I've chosen to publish this stuff using HTML. There are precious few links as yet, but then I've got precious few documents put up yet. It takes me about an hour per to dig around my floppies and/or troll my hard disks to find the material, do some minimal HTML formatting, and make them available. Pretty efficient use of my time. Everything except the Mitrek mods to date is stuff that has already been published in PSR or elsewhere. If you want the originals, I suggest you call the TAPR office and buy the package that gives you reprints of every issue of PSR to date. There is "good stuff" in there. In fact, for the Bits in the Basement columns I did, should I get around to putting them up on my web server, I may have to scan/OCR them, since I don't know that I kept all the original ASCII files...

: Bdale, Glenn Elmore once commented that he found the Mitrek receiver
: to be less linear across its band width than one might desire for
: 9600 operation. You haven't had to cut out any filters, etc? What's the
: bit-error-rate like for your users, and what are they using?

I've never actually measured bit error rate on one on the bench, but our operational experience shows that with a repeater on the hill, any two stations can expect about a 98% ping return rate over large (20-50k pings) measurement intervals. Given the multipath issues along the front range of Colorado (we have this geologic step-function just to the west, makes a bodacious reflector for RF!), it has not been clear to us that the return on investment of doing more to the radios is worthwhile. It is way annoying to lose 2% of your packets, but then 9600 baud isn't sufficient for much interactive use anyway, and we push tons of smtp and nntp traffic over this stuff very happily...

Besides, it's "only 9600 baud", and we don't want to expend too much sweat
on such low-speed stuff... :-) :-)

73 - Bdale, N3EUA

68. Re: http

From: David Bashaw <dbashaw@synoptics.com>
Date: Thu, 25 Aug 94 09:54:11 PDT
To: netsig@tcet.unt.edu
Message-ID: <9408251654.AA16505@rimbaud>
Rendered body type: text/plain

Don Broderick [N3GUZ] wrote:
>---- I'm not defining a protocol here, rather hope this brief overview is
>   helpful. For more information, I'd suggest that you surf the web
>   for yourself!!!

I'd like to. It appears a couple of Mosaic sessions brings our firewall
to its knees. !(Mosaic) here.

Thanks for the inf though.
Dave

69. RE: Mitrek Radio Mods

From: "Thomas Jim" <thomas_jim@macmail2.cig.mot.com>
Date: 25 Aug 1994 13:00:39 -0500
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <199408251801.AA06756@pobox.mot.com>
Rendered body type: text/plain

By the way, not everyone who reads this list uses a UNIX box or a IBM PC
compatable ether. I am at work using MSMAIL on a MAC Powerbook.
I subscribe to gleam information about problems I have with NOS, whether I can
use FREE_BSD UNIX to run packet and replace my JNOS Pop Mail/DNS Server, and
general ideas on tcpip. As a packet user with tncs, as well as a network node
ILELG with my Gracillis PackeTen at home, this list helps me and I vote for its
continued existance. 73 de Jim
n9moo@n9moo.ampr.org [44.72.15.135]
thomas_jim@macmail2.cig.mot.com

70. Re: Mitrek Radio Mods

From: bonzai!hank@aluxpo.att.com (Hank Pustarfi)
Date: Thu, 25 Aug 1994 14:57:01 -0400 (EDT)
To: netsig@tcet.unt.edu
Message-ID: <m0qdjyv-0003efC@bonzai.cnet.att.com>
Rendered body type: text/plain

TAPR Network Special Interest Group (net_sig@tcet.unt.edu) wrote:
+-----------------
|The documents are written in HTML, with schematics (where appropriate) as
|Postscript images. Putting them out for FTP wouldn't do very much good. I'm
|sorry if this inconveniences some possible readers... but learning how to deal
|with the Web is a "good thing".
+-------------->8

I have FTP and mail access to the internet. I am not able to access the
Web via my connection. I can however view HTML documents locally that I
down load with ftp using Mosic or lynx. Can HTML files (------.html),
including this one, PLEASE be made available for ftp (ucsd), or mail
daemon (TAPR) at some location.

Thanks;
73 - Hank K3WGV

--

Hank Pustarfi   k3wgv@k3wgv.ampr.org   hank@aluxpo.att.com

"It is always the adventurers who accomplish great things." -- Montesquieu

71. Re: Mitrek Radio Mods

From: David Bashaw <dbashaw@synoptics.com>
Date: Thu, 25 Aug 94 13:08:38 PDT
To: netsig@tcet.unt.edu
Message-ID: <9408252008.AA18043@rimbaud>
Rendered body type: text/plain

Thanks for all the input on the Moasic stuff. Out of respect for those
of us who are Moasiacally-challenged, if I ever make posts to
ftp sites (I havn't yet) I promise not to Hypertext it.

Plain vanilla ftp for us DOS slobs :>)

I chatted with a Moasic user here. Getting Moasic seems like the old
"buy more DRAM and a bigger H.D. so I can buy a copy of Windoze so I can
use a dos-in-the-box so I can do all the stuff I was doing before I
bought the DRAM and H.D. and Windoze." conundrum.

Such a deal!

If the end result is getting text documents as I used to with
plain old ftp, then this seems like a good way to ++Bill_GatesBankAccount :>)

73
Dave

72. Re: http

From: makinc@hhcs.gov.au (Carl Makin)
Date: Fri, 26 Aug 1994 09:36:30 +1000
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <199408252336.JAA25985@sserve.cc.adfa.oz.au>
Rendered body type: text/plain

At 11:50 AM 25/8/94 -0500, Someone wrote:

> As you can see from the short html example above, this small amount of text
> could easily be transfered in one short packet. There shouldn't be any
> problem using these techniques over amateur packet radio.

I've run Mosaic to the Internet (as a test) over a 4800 baud, half duplex
radio link. It was actually reasonably usable for plain text and *small*
graphics only. WWW or Gopher would be good tools to deploy in the Amateur
Service.

It's something I'm slowly looking at for here.

Carl.

--
Carl Makin (VK1KCM)   "Speaking for myself only!"
makinc@hhcs.gov.au   'Work +61 6 289 8443'   Canberra, Australia
'The best book on programming for the layman is "Alice in Wonderland";
 but that's because it's the best book on anything for the layman.'

73. Re: Mitrek Radio Mods

From: "Don Broderick [N3GUZ]" <broderic@codger.physics.duq.edu>
Date: Sat, 27 Aug 1994 12:09:47 -0400 (EDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9408271203.A2850-0100000@codger.physics.duq.edu>
Rendered body type: text/plain

On Sat, 27 Aug 1994, TAPR Network Special Interest Group wrote:

> From: David Bashaw <dbashaw@synoptics.com>
> Subject: Re: Mitrek Radio Mods
> To: netsig@tcet.unt.edu
> Date: Thu, 25 Aug 94 13:08:38 PDT
>
>
> If the end result is getting text documents as I used to with
> plain old ftp, then this seems like a good way to ++Bill_GatesBankAccount :>)
>

I am sorry if I have misled you into believing this. Access to the WWW,
or other hypertext information, involves more than "plain old ftp". Some
of the advantages lie in this system's ability to cross-reference
documents by a simple linking system; many diferent modes of information
transfer are supported by this system; documents are automatically
re-formated for your specific viewer (printing a document is just as easy
as reading it on the screen). Furthermore, all of this can possibly be
implemented with only a small ammount of network overhead (although so
much information may be accessed, network load may actually be quite
high...). As has been pointed out in several posts to this group already,
there are text based browsers available which do not require windows.

I hope that the continued publication of amateur radio documents on the
web will prove incentive for more hams to explore this wonderful technology.

73
db

74. Mosaic (was RE: Mitrek Radio Mods)

From: Tim Baggett <tim@NMSU.edu>
Date: Sat, 27 Aug 1994 12:55:03 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.87.9408271203.A28442-0100000@gauss>
Rendered body type: text/plain

On Sat, 27 Aug 1994, TAPR Network Special Interest Group wrote:

> By the way, not everyone who reads this list uses a UNIX box or a IBM PC
> compatable ether. I am at work using MSMAIL on a MAC Powerbook.

We got ya covered already Jim :-) You can obtain NCSA Mosaic by Anonymous
FTP to FTP.NCSA.UIUC.EDU. Look in the /Web/Mosaic/Mac directory. Versions
of Mosaic for Windows and Unix X Windows is also found here. I have used
Mosaic for Unix, but generally use our Mac Duo. I'm not sure of any
other Web browsers out there as the University only supports NCSA's Mosaic.

On the same thread, I would like to encourage the use of WWW for the
publishing of documents. The ability to grab a formatted document
complete with schemetics, figures, illustrations, etc is fantastic. I
realize that not everyone can use the Web, so plain FTP of postscript
files should also be made available. BTW, NM State University is in the
process of converting ALL there documentation and information services
over to the web, including the submission of forms(!). The same problems
seen on the list is happening on campus. (anyone interested in browsing:
http://www.nmsu.edu)

73
Tim

```
-------------------------------------------------------------------------------
Tim Baggett, AA5DF             | Countdown to Graduation: 111 days & counting
Las Cruces, New Mexico         |     "Ya want fries wid dat hamburger?"
                               |
New Mexico State University    |    "If you can't run with the big dogs,
Electrical Engineering Student |           then stay on the porch"
-------------------------------------------------------------------------------
```

75. It's time to phaseout the FM !

From: iw1cxz@ik1qld-10.ampr.org.
Date: Mon, 29 Aug 94 01:05:06 utc
To: netsig@tcet.unt.edu
Message-ID: <17158@ik1qld-10.ampr.org.>
Rendered body type: text/plain

Grugliasco, August 31, 1993

To: IARU and Italian Government.
Re: Phase Out of FM, nowadays it must be considered "superseded"
    for Amateur Radio communications.

A well known formula gives us the theoretic noise in the
antenna connector of a "perfect" receiver:

$$N = K T0 B$$

Where: N= Noise Power in Watt
K= Boltzman constant (1.38 x 10 exp -23)
T0 = Absolute temperature at which N is measured.
B= Bandwidth in the receiver

Assuming T0= 290, the formula can be expressed in dBM and
become:

$$dBM = -173.9 + 10 \log B$$

So, we have a formula that gives us the minimum theoretic
signal that a receiver can receive in function of his Bandwidth.
Making the due account we have:

Emission	Bandwidth	dBM

```
      ------------   -----------     ------
         CW            100 Hz         -153.9
        SSB            2.4 KHz        -140.1
         FM            25 KHz         -129.9
```

I intend "a theoretic minimum noticeable signal, equal to the noise of the receiver", but:
In CW one can, only with his Brain and his Ears, sure not with machines, make use of a signal at least 6 dB under the noise; in SSB let we say that we need a minimum signal to noise ratio of +6 dB; in FM, before the action of the limiter and discriminator, we need a ratio of minimum 12 dB.
Making again the calculation and considering a base noise on the receiver and antenna of 2 dB (very big but real), we have:

Minimum Real Signal useful in a Real Receiver

CW	100 Hz	-157.9 dBM = 3 Nanovolt	-6.3 S. Units
SSB	2.4 KHz	-135.1 dBM = 40 Nanovolt	-2.3 S. Units
FM	25 KHz	-115.9 dBM = 0.4 microvolt	+1 S. Units

Considered that an Amateur Radio is interested mainly in the purpose, that is the contact itself and sure not the fidelity or easiness of a communication, one could ask himself: why to use phone ?!
If we would like to be more realistic, we must say that for an Amateur Radio CW is the King of any way to make a contact; when any other way of communication is impossible CW remain comfortable and safe.
Not everybody has the Honor to be skilled in CW and consequently the premium to use it, and so let we take voice into consideration but, why to waste in the spectrum 10 channels in favor of a communication affected by a so bad sensitivity perhaps in favor of a fidelity that we do not need ?
FM was very useful in the last years for the easy to design sets and for the availability of components from the consumer market, but companies without scruple advertised the easy to operate of FM, introducing on the market a lot of useless "rubbish".
With the availability of the modern hardware, FM is becoming completely useless to Amateur Radio, or rather dangerous, because with its natural deafness, it can disturb other communications that are non-existent for FM. !
I propose to the Italian Government and to IARU (I would like to hear something from IARU administrators, bringing to their attention that in the last council in the Nederlands, I1MMS, the Italian representative proposed something similar that was approved by applause), to declare "Phase Out" FM for the Amateur Service.
Phase Out means that FM is nowadays superseded in Amateur voice communication, it could be used for a limited time for emergency operation, and for those things more than the voice, like Packet Networking, that need more bandwidht.
FM must be deterred for the voice usage, and stated a date after which it will be considered as forbidden.

73 Sergio, I1TMH

```
                                                                  ////
                                                                 (o o)
-----------------------------------------------------------oOO-(_)-OOo--------
| 73 de IW1CXZ Andrea Borgnino- IK1QLD-10 Universita' di Torino Team - NWIDG  |
|                                                                             |
|                Ampr Tcp-Ip  >  iw1cxz@ik1qld-10.ampr.org                    |
|                 Email Internet    >  andrea@radio-gw.cisi.unito.it          |
|                  Email Packet AX25 BBS  >  iw1cxz@i1ylm.ipie.ita.eu         |
-------------------------------------------------------------------------------
```

76. Re: It's time to phaseout the FM !

From: ssampson@disco.awacs.af.mil
Date: Sun, 28 Aug 1994 22:01:42 CST
To: netsig@tcet.unt.edu
Message-ID: <199408290303.AA17700@sabea-oc.af.mil>
Rendered body type: text/plain

I must say that was an interesting article. I'm not sure what it means though; Indeed, it must be even more hilarious in Italian.

> when any other way of communication is impossible CW remain

> comfortable and safe.

Don't forget to wear a helmet with that talkie...
--
Steve N5OWK

77. Re: It's time to phaseout the FM !

From: bruce@pixar.com (Bruce Perens)
Date: Sun, 28 Aug 94 21:32 PDT
To: bruce@pixar.com,
"TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <m0qeyOd-0007mDC@mongo.pixar.com>
Rendered body type: text/plain

>From: iw1cxz@ik1qld-10.ampr.org.
> Re: Phase Out of FM, nowadays it must be considered "superseded"
> for Amateur Radio communications.

A clever spoof of "phase out CW" arguments. I'll have to dig up the article in which I showed that EBCDIC would be a better code than Morse to use with the CW Mode.

On a more serious note, I don't see how we can expect the CW requirement to survive the next ITU meeting, even with ARRL sworn (see July '93 minutes) to defend it through IARU. While I'll be happy to see it go, it's obvious that not everybody feels that way. Let's do something to help those poor old guys - maybe we should build a CW simulator for the Internet :-) .

Bruce AB6YM

78. Re: It's time to phaseout the FM !

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Mon, 29 Aug 1994 08:12:21 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9408290756.B4976-0100000@kazak>
Rendered body type: text/plain

On Sun, 28 Aug 1994, TAPR Network Special Interest Group wrote:

> From: iw1cxz@ik1qld-10.ampr.org.
> Subject: It's time to phaseout the FM !
> To: netsig@tcet.unt.edu
> Date: Mon, 29 Aug 94 01:05:06 utc
>
> Grugliasco, August 31, 1993
>
> To: IARU and Italian Government.
> Re: Phase Out of FM, nowadays it must be considered "superseded"
> for Amateur Radio communications.
>
> A well known formula gives us the theoretic noise in the
> antenna connector of a "perfect" receiver:
>
> N = K T0 B
>
> Where: N= Noise Power in Watt
> K= Boltzman constant (1.38 x 10 exp -23)
> T0 = Absolute temperature at which N is measured.
> B= Bandwidth in the receiver
>
> Assuming T0= 290, the formula can be expressed in dBM and
> become:
> dBM = -173.9 + 10 log B
>
> So, we have a formula that gives us the minimum theoretic
> signal that a receiver can receive in function of his Bandwidth.
> Making the due account we have:
>
> | Emission | Bandwidth | dBM |
> |---|---|---|
> | CW | 100 Hz | -153.9 |
> | SSB | 2.4 KHz | -140.1 |
> | FM | 25 KHz | -129.9 |

This just tells us what noise is at the receiver input. CW is lowest because it CAN use a narrow filter bandwidth.

(much removed information)

> Minimum Real Signal useful in a Real Receiver
>
> CW 100 Hz -157.9 dBM = 3 Nanovolt -6.3 S. Units
> SSB 2.4 KHz -135.1 dBM = 40 Nanovolt -2.3 S. Units
> FM 25 KHz -115.9 dBM = 0.4 microvolt +1 S. Units
>
> Considered that an Amateur Radio is interested mainly in the
> purpose, that is the contact itself and sure not the fidelity or
> easiness of a communication, one could ask himself: why to use
> phone ?!

We need FM voice channel quiet like so we can use ham radio in the car with the wife and kids.

> If we would like to be more realistic, we must say that for an
> Amateur Radio CW is the King of any way to make a contact; when
> any other way of communication is impossible CW remain
> comfortable and safe.

That is not true. CW will get through when other modes fail if data rate is not an issue. For moon bounce contacts where all you need is a callsign (you already knew that from the phone call to set up the scked) you need 3 more letters and a contact is made.

> With the availability of the modern hardware, FM is becoming
> completely useless to Amateur Radio, or rather dangerous, because
> with its natural deafness, it can disturb other communications
> that are non-existent for FM. !

You are saying that FM invented by Dr. Armstrong is for some reason not acceptable to the Italian Government for Amateur Radio use. This is weird since the Italian Government buys thousands of FM radios for it's police and other services.

> Phase Out means that FM is nowadays superseded in Amateur voice n<1P>
communication, it could be used for a limited time for emergency >
operation, and for those things more than the voice, like Packet >

Well packet is a mode that makes use of the processing gain of FM.

Networking, that need more bandwidht. > FM must be deterred for the voice usage, and stated a date > after which it will be considered as forbidden.
> > 73 Sergio, I1TMH

Sergio I am not sure what you are saying, but your discussion ignores "processing gain" like we achieve when using spread spectrum. At work I built a data communications channel with a carrier of 35 GHz and a bandwidth of 125 MHz. We got over 40 DB of S/N improvement using direct sequence modulation.

I am sure you realize there is a lot more to a digital communication channel than receiver front end noise...

73, karl k5di

79. Re: It's time to phaseout the FM !

From: David Bashaw <dbashaw@synoptics.com>
Date: Mon, 29 Aug 94 12:52:44 PDT
To: netsig@tcet.unt.edu
Message-ID: <9408291952.AA25278@rimbaud>
Rendered body type: text/plain

> I am sure you realize there is a lot more to a digital
>communication channel than receiver front end noise...
>
>73, karl k5di
Its an Italian joke, Karl. Isn't it?

Dave
wa6qwl

80. Code requirement (WAS: Phase out FM)

From: "Battles, Brian, WS1O" <bbattles@arrl.org>
Date: Mon, 29 Aug 94 16:57:00 EDT

To: netsig <netsig@tcet.unt.edu>
Message-ID: <2E624D2C@arrl.org>
Rendered body type: text/plain

Bruce, AB6YM, wrote:

> ...I don't see how we can expect the CW
> requirement to survive the next ITU meeting,
> even with ARRL sworn (see Jul '93 minutes)
> to defend it through the IARU. Although I'll
> be happy to see it go, it's obvious that not
> everybody feels that way...

 Sometimes things change; maybe this will,
too. The following is reported in Happenings
in Oct '94 QST:

IARU PANEL TO WEIGH CODE REQUIREMENT

  The International Amateur Radio Union (IARU)
has established an ad hoc committee on Morse
code, and its report was to be considered this
month. International Telecommunication Union (ITU)
rules require competency in Morse code operating
to be shown before a radio amateur is permitted
to operate on the HF bands--the DX bands below
30 MHz.
  IARU President Richard Baldwin, W1RU, said
 There are radio amateurs who from time to time
question the necessity for this mandatory Morse
code requirement. On the other hand, many radio
amateurs--indeed, possibly complete societies
and even whole regions--continue to support the
continuance of this provision.
  As part of an ongoing review of the amateur
service, the Administrative Council of the IARU
(IARU AC) established a CW Ad Hoc Committee to
produce a report for consideration by the IARU AC
at its meeting in Singapore in September 1994.
  The committee members were Fred Johnson, ZL2AMJ,
a director of IARU Region 3, as chairman; Dr John
Allaway, G3FKM, secretary of IARU Region 1; and
ARRL Executive VP David Sumner, K1ZZ, from the
IARU International Secretariat and ARRL HQ.
  It s expected that after consideration by the
IARU AC, the report of the committee may be made
available to the IARU Regional organizations for
further study and comment, Baldwin said.

81. Re: Code requirement (WAS: Phase out FM)

From: hank_oredson@MENTORG.COM (Hank Oredson)
Date: Mon, 29 Aug 94 16:36:32 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <9408291636.ZM20707@hanko>
Rendered body type: text/plain

On Aug 29, 6:23pm, TAPR Network Special Interest Group wrote:
> Subject: Code requirement (WAS: Phase out FM)
> From: "Battles, Brian, WS1O" <bbattles@arrl.org>
> Subject: Code requirement (WAS: Phase out FM)
> To: netsig <netsig@tcet.unt.edu>
> Date: Mon, 29 Aug 94 16:57:00 EDT
>
>
> Bruce, AB6YM, wrote:
>
> > ...I don't see how we can expect the CW
> > requirement to survive the next ITU meeting,
> > even with ARRL sworn (see Jul '93 minutes)
> > to defend it through the IARU. Although I'll
> > be happy to see it go, it's obvious that not
> > everybody feels that way...
> ---------------
>
> Sometimes things change; maybe this will,
> too. The following is reported in Happenings
> in Oct '94 QST:
>
> IARU PANEL TO WEIGH CODE REQUIREMENT

>

Would you folks be so kind as to connect this with
the topic at hand: Networking in Amateur Radio.

Are you proposing we use Morse as our network protocol
character set encoding?

Or did you just get confused and post this here by accident?

   ... Hank

--

Hank Oredson @ Mentor Graphics   Library Operations
Internet   : hank_oredson@mentorg.com   "Parts 'R Us!"
Amateur Radio: W0RLI@W0RLI.OR.USA.NOAM

82. Re: It's time to phaseout the FM !

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Tue, 30 Aug 1994 14:41:44 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9408301420.B21558-0100000@kazak>
Rendered body type: text/plain

On Mon, 29 Aug 1994, TAPR Network Special Interest Group wrote:

> From: David Bashaw <dbashaw@synoptics.com>
> Subject: Re: It's time to phaseout the FM !
> To: netsig@tcet.unt.edu
> Date: Mon, 29 Aug 94 12:52:44 PDT
>
>
> >   I am sure you realize there is a lot more to a digital
> >communication channel than receiver front end noise...
> >
> >73, karl k5di
> Its an Italian joke, Karl.   Isn't it?
>
>
> Dave
> wa6qwl
>
>
        God I hope so, or I won't hire any Italian educated EE's...hi

Karl k5di

83. Re: Code requirement (WAS: Phase out FM)

From: bruce@pixar.com (Bruce Perens)
Date: Tue, 30 Aug 94 17:10 PDT
To: bruce@pixar.com,
        "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <m0qfdFz-0007pUC@mongo.pixar.com>
Rendered body type: text/plain

> Would you folks be so kind as to connect this with
> the topic at hand: Networking in Amateur Radio.

What - you don't consider CW operation to be digital networking? :-)

You're right, it's off-topic. I apologize.

        Bruce AB6YM

84. Re: Code requirement (WAS: Phase out FM)

From: hank_oredson@MENTORG.COM (Hank Oredson)
Date: Wed, 31 Aug 94 10:42:16 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <9408311042.ZM29423@hanko>
Rendered body type: text/plain

On Aug 30, 10:41pm, TAPR Network Special Interest Group wrote:
> Subject: Re: Code requirement (WAS: Phase out FM)
> From: bruce@pixar.com (Bruce Perens)
> Subject: Re: Code requirement (WAS: Phase out FM)
> To: bruce@pixar.com,

> Date: Tue, 30 Aug 94 17:10 PDT
>
> > Would you folks be so kind as to connect this with
> > the topic at hand: Networking in Amateur Radio.
>
> What - you don't consider CW operation to be digital networking? :-)
>
> You're right, it's off-topic. I apologize.

Well, to bring this back on topic ... back about three years
ago I actually started a prototype of a CW interface to my
BBS code. Yes, it WAS intended to be a joke, and yes I did
intend to put it on air and let folks play with it. Sort of
like some the the Russian "robot" satellites. Other things
(building the NW Oregon network, CLOVER) got in the way of the
"CW BBS" project.

May still do it ...

   ... Hank

--

Hank Oredson @ Mentor Graphics   Library Operations
Internet   : hank_oredson@mentorg.com   "Parts 'R Us!"
Amateur Radio: W0RLI@W0RLI.OR.USA.NOAM

85. Mosaic

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Wed, 31 Aug 1994 12:55:40 -0600 (MDT)
To: TCP digest <tcp-group@ucsd.edu>
Cc: Sig Networking <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9408311250.A3706-0100000@kazak>
Rendered body type: text/plain

Well got mosaic working and connected to the World Wide Web (www)
servers. I did get Bdales paper on Mitrex mods. So here is how you do it:

        1. FTP to ftp.ncsa.uiuc.edu and log in with anaonymous (spelled
right) and your internet address as a password.

        2. Change directory to /Mosaic/Windows (and do use the cap M and W)

        3. D/L win32s.zip which is a modification to windows 3.1 that
makes it function as a 32 bit system.

        4. D/L wmos20a6r?.zip which is the mosaic software that is free.

        5. D/L winsock.zip which is Trumpet ver 1.0, a shareware program.

        6. D/L winapps.zip which has the telnet and ftp software for Trumpet.

        7. Quit and make a \mosaic and \trumpet directories and put
mosaic in it's dir. and put winapps and winsock in \trumpet.

        8. Make a \temp and put win32s there. Using pkzip ver 2.04g
pkunzip win32s. Read the readme and them pkunzip again. Then in windows
load the new windows software. It went fine the first time with me.

        9. Pkunzip mosaic and print out the documentation. Follow the
instructions and get mosaic.ini fixed up.

        10. Pkunzip the files in \trumpet and print out the documentation
and install Trumpet either for a packet driver to an ethernet connection
or use it to slip connect via the telephone.

        When you get all this done properly (it took me 4 hours) bring up
mosaic. You can from the first window go to Bdales web in Colorado very
fast and my HP laserjet series ll prints out almost everything I see on
the screen perfectly!

        If you don't have a 88386 or better cpu and run windows version
3.1 then ignore all above this line.

-karl k5di

86. TAPR-2 TNC Mods; Bit regeneration?

From: "W. M Wood - The Signal Group" <mikewood@mercury.interpath.net>
Date: Wed, 31 Aug 1994 16:51:22 -0400 (EDT)
To: netsig@tcet.unt.edu
Message-ID: <Pine.3.89.9408311603.A22035-0100000@mercury.interpath.net>
Rendered body type: text/plain

I'm in the process of building and installing a 1200 baud bit
regenerating full duplex packet repeater for the PacketCluster
group in this area. (Yes I know you can repeat 1200 baud fairly
reliably through a standard voice repeater, and we are already
up and running in that mode with DCD control of the repeaters's
PTT. For a number of reasons we will be changing over to bit
regeneration.)

It's been a real struggle finding info on how to modify a TAPR
-2 clone TNC (MFJ-1270) for bit regeneration repeater operation.
So far I've not found an already engineered solution.

Heres what I have found:

1) Discussions via Internet with several who had done bit
regeneration modifications to non-TAPR 2 TNCs did not apply
to TAPR-2 clone TNCs because the Txdata and Rxdata switching is
different.

2) I was told that the TAPR journals had several articles on
1200 baud bit regeneration mods for TAPR-2 clones. I purchased all
of the TAPR back issues. Almost nothing regarding the subject
was contained within them. Lot's of mention by people using
packet rengerating repeaters (mostly 9600 baud) or advocating
the use of them, but nothing in the way of how to mod a TAPR-2
TNC for 1200 baud bit regeration.

3) Someone told me PacComm sold an EPROM for TAPR-2 TNCs that
turned the TNC into a 1200 baud bit regenerator including a FIFO
elastic buffer. After four phone calls to TAPR no one there has
yet to FAX me specs on this EPROM. Although they say they have
it ($30.00 each), I have been unable to get anyone there to
give me me ANY technical description of it. I don't know if
it reallly exists or whether it works only with their hardware,
etc.

So can you point me toward a solution or share details on how
you have modified a TAPR-2 for this purpose ?

Thanks.

Mike Wood   Internet: mikewood@mercury.interpath.net
The Signal Group   Amateur Radio: NT4O
P.O. Box 1979   ***Avoid company disclaimers by owning the company ***
Wake Forest, NC 27588

Phone: 919-556-8477   Fax: 919-556-0115

September 1994

Original source file: netsig.9409
Source: http://ftp.tapr.org/tapr_history/SIG_Archives/netsig/mail_archive/netsig.9409

1. Re: TAPR-2 TNC Mods; Bit

From: Greg Jones <gjones@tenet.edu>
Date: Thu, 1 Sep 1994 00:49:25 -0500 (CDT)
To: netsig@tcet.unt.edu
Message-ID: <199409010549.AAA10284@Kay-Abernathy.tenet.edu>
Rendered body type: text/plain

According to TAPR Network Special Interest Group:
> 2) I was told that the TAPR journals had several articles on
> 1200 baud bit regeneration mods for TAPR-2 clones. I purchased all
> of the TAPR back issues. Almost nothing regarding the subject
> was contained within them. Lot's of mention by people using
> packet rengerating repeaters (mostly 9600 baud) or advocating
> the use of them, but nothing in the way of how to mod a TAPR-2
> TNC for 1200 baud bit regeration.

Hi Mike. Dorothy faxed me your request and I am off looking for it also
- since I know I have seen it someplace. I thought it might have been in
one of the networking proceedings.

I check the last few issues thinking it was there - but no.

> 3) Someone told me PacComm sold an EPROM for TAPR-2 TNCs that
> turned the TNC into a 1200 baud bit regenerator including a FIFO
> elastic buffer. After four phone calls to TAPR no one there has
> yet to FAX me specs on this EPROM. Although they say they have
> it ($30.00 each), I have been unable to get anyone there to
> give me me ANY technical description of it. I don't know if
> it reallly exists or whether it works only with their hardware,
> etc.

Do you mean PacComm all the way through, becuase we (TAPR) do
not have an EPROM...and Dorothy only mentions that you called twcie thus
far. Everyone please keep in mind that only Dorothy is located at the TAPR
office...no one technical in in the back room :-) Anyone of help is at
least 4 hours away. So she calls and faxes requests on to several others to
reply to.

Cheers - Greg

2. Re: TAPR-2 TNC Mods; Bit

From: ron@chaos.eng.wayne.edu (Ron Atkinson N8FOW)
Date: Thu, 1 Sep 1994 02:40:11 -0400 (EDT)
To: netsig@tcet.unt.edu
Message-ID: <9409010640.AA29087@chaos.NIS.chaos>
Rendered body type: text/plain

> 2) I was told that the TAPR journals had several articles on
> 1200 baud bit regeneration mods for TAPR-2 clones. I purchased all
> of the TAPR back issues. Almost nothing regarding the subject
> was contained within them. Lot's of mention by people using
> packet rengerating repeaters (mostly 9600 baud) or advocating
> the use of them, but nothing in the way of how to mod a TAPR-2
> TNC for 1200 baud bit regeration.

The TAPR PSR January 1992 Issue #45 has an article titled:

Modifying the Kantronics DE-1200 for Full-Duplex Operation

This is the same principle in modifying the tnc for bit regeneration. Also
ARRL/CRRL 9th Computer Networking Conference papers (you know, the one
that people in this group say is out of publication :-) also has an article
titled:

Digital Regenerator Modification for the TNC-2A.

This explains how to do it also. It's only one IC chip that you can install
on the modem disconnect header and make it an instant bit regenerator for
a repeater. The 9th CNC paper uses a 4053 and the one in the TAPR PSR
uses a 74HC157.

--

Ron N8FOW

AMPRnet : n8fow@n8fow.ampr.org
Internet : ron@chaos.eng.wayne.edu
           aa011@detroit.freenet.org

#include <std_disclaimer.h>
/* all views and opinions expressed above are my own. */

3. Re: TAPR-2 TNC Mods; Bit

From: Greg Jones <gjones@tenet.edu>
Date: Thu, 1 Sep 1994 02:13:43 -0500 (CDT)
To: netsig@tcet.unt.edu
Message-ID: <199409010713.CAA11482@Kay-Abernathy.tenet.edu>
Rendered body type: text/plain

Hi Mike,

I found the article. Sorry it took this long, but I didn't have the 9th CNC handy. I remember seeing the article. It was by Bill Beech and Jack Taylor. Page 6 of the 1990 CNC held in Canada.

We should have the 9th CNC back from the printers, so Dorothy can either fax it to you, I can fax it to you, or you can get that issue. I would suggest the fax since you purchased all the back issues on someone elses recommendations - I feel sorta of bad. If you want to return them - you can call Dorothy :-)

For those that haven't heard yet, TAPR is now the Agent on all the past CNC and DCC from 1-11. We are getting the 9th reprinted.

Cheers - Greg

4. Re: TAPR-2 TNC Mods; Bit

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Thu, 1 Sep 1994 08:05:16 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9409010848.B13963-0100000@kazak>
Rendered body type: text/plain

Pac Comm can be contacted by calling 1-800-486-7388 and asking.

-karl

5. Re: TAPR-2 TNC Mods; Bit

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Thu, 1 Sep 1994 08:28:27 -0600 (MDT)
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Message-ID: <Pine.3.89.9409010802.D13963-0100000@kazak>
Rendered body type: text/plain

I have Bdale's Modifying the Kantronics DE-1200 for Full Duplex Repeater operation in big letters I got from Bdales www server. I can fax these to you (3 pages) if you send me your number.

-karl

6. Re: TAPR-2 TNC Mods; Bit

From: "W. M Wood - The Signal Group" <mikewood@mercury.interpath.net>
Date: Thu, 1 Sep 1994 11:14:54 -0400
To: netsig@tcet.unt.edu
Message-ID: <199409011514.LAA05589@mercury.interpath.net>
Rendered body type: text/plain

Greg,
Thanks for all the help. As I told Dorothy I will be keeping all the back issues I bought. Even though I didn't find the info I was looking, I did find the back issue to be great reading and a good future resource.

Would you or Dorothy please fax that article from the 9th CNC today?

Perhaps you can get through to Dorothy easier than I. I don't always get through the automated system to her.

I need that particular article to finish the mods over the holiday weekend. I will buy the complete set of CNC/DCC issues as well.
I like having reference info on hand when I need it!

My FAX number is below.

Thanks again Greg.

Mike Wood   Internet: mikewood@mercury.interpath.net
The Signal Group   Amateur Radio: NT4O
P.O. Box 1979   ***Avoid company disclaimers by owning the company ***
Wake Forest, NC 27588

Phone: 919-556-8477   Fax: 919-556-0115

7. Re: TAPR-2 TNC Mods; Bit

From: "W. M Wood - The Signal Group" <mikewood@mercury.interpath.net>
Date: Thu, 1 Sep 1994 11:23:34 -0400
To: netsig@tcet.unt.edu
Message-ID: <199409011523.LAA05940@mercury.interpath.net>
Rendered body type: text/plain

Greg,

Paccomm is the "non-responsive" group I was referring to regarding
the EPROM. Dorothy and TAPR have been most responsive , courteous and
helpful. I referrred to the TNC-2 as TAPR-2 TNC which is technically
in error and probably confused many who read my posting.

My apologies!

Mike Wood   Internet: mikewood@mercury.interpath.net
The Signal Group   Amateur Radio: NT4O
P.O. Box 1979   ***Avoid company disclaimers by owning the company ***
Wake Forest, NC 27588

Phone: 919-556-8477   Fax: 919-556-0115

8. Digital Repeater

From: "Rick Whiting" <Rick_Whiting@ATK.COM>
Date: 1 Sep 1994 10:34:43 -0600
To: "Post TAPR NETSIG TAPR" <netsig@tcet.unt.edu>
Message-ID: <199409011528.KAA04400@ATK.COM>
Rendered body type: text/plain

Subject: Time:10:27 AM
  OFFICE MEMO   Digital Repeater   Date:9/1/94
Here is some info I picked up from the Internet Ham-Digital Newsgroup a while
back. Sorry, I forgot who did the posting.

:   Now, we need a way to do bit regeneration (IE, very fast
: digipeater) without bothering routing.

:   Two TEKK Micro's, and 1 9600bps modem will do nicely for this.
: Input frequency, output frequency, it's half duplex, and goes both
: ways. The TEKK Micro's have a 3ms keyup to stable time. Put this
: gadget on a nice repeater tower near you. And you divide the network
: distance. What you do is take the frequency of one area, and
: bit-regenerate it on another.

:   IE, RX -> TX, and TX -> RX. No TNC needed. All you need the
: modem to do is regenerate the bits. Course the frequencies have to be
: different, but so what.

:   And we increase the chances for a collision by a little bit,
: but having this device installed fixes things a lot more.

A better solution is to actually build up a full-blown repeater. Without
the cavities or a >lot< of antenna seperation the overload suceptable
receiver in the TEKK will get desensitized and your system will bounce up
and down as the received signal comes and goes. We've seen this happen when
trying to use some of the old commercial mobile telephone (IMTS) radios with
their internal duplexers. There is just not enough isolation there to
prevent desense - typically about 10 dB of it. As for a bit-regenerator,
TAPR has a modem that has provisions for the bit-regen right on the PCB.
Exact prices are not in memory, but $70 for the modem, and $20 for the clock
and bit-regen options are about right. We have 4 systems in the area now
using this hardware, and RF path problems aside, those systems work very
well. One has been up for close to 2 years, with no maintainence required.
We used a GE Mastr II mobile for the 2M system and one of the 440 systems.

the other two 440 systems are using Motorola IMTS radios (Pulsar?).

:   The only thing you will have to do is set your TXDELAY by
: approximately .0096/sec + .0006 (9600bps + 3ms*2 radios stabilize
: time) = .0102/sec. So we'll settle for 2 hundreths of a second
: TXDELAY. Not bad at all if you ask me. Some of you may be asking why
: I'm using 9600bps as a value, and I figure that the difference between the
: time where the TNC get's the digital information and actually starts to
: make it analog (modulate it), that it's going to be about that long.
: (I could be wrong, but then again, I'm talking about pushing the
: envelope here.)

TXDelay through a bit-regen system will have to be a little longer, because
it has to recogize the incoming data before it can key up the transmitter.
Also, the receiving TNC has to get syncrhonized on the incoming data after
the repeater comes up and stablizes (about 7 mS on our modified commercial
rig). Since a data randomizer is part of the modem specification, this adds
to the minimum TXDelay you can use, even on a simplex path. Still is better
than 1200!

9. Re: Code requirement (WAS: Phase out FM)

From: "Battles, Brian, WS1O" <bbattles@arrl.org>
Date: Thu, 01 Sep 94 12:54:00 EDT
To: netsig <netsig@tcet.unt.edu>
Message-ID: <2E660777@arrl.org>
Rendered body type: text/plain

>> Would you folks be so kind as to connect this
>> with the topic at hand: Networking in Amateur Radio.

> You're right, it's off-topic. I apologize.

  Me, too--I guess I was involved. But Bruce started it!

  8-)

 CUL es 73 de BB
 ____
 Brian Battles, WS1O   The World's Foremost Authority

 QST Features Editor, ARRL HQ
 Internet bbattles@arrl.org Compu$erve 70007,3373
 MCI   215-5052   Amprnet   ws1o@ws1o-2.ampr.org
  -
    ALL COMMENTS ARE MY OWN PRIVATE, PERSONAL REMARKS AND
     IN NO WAY CONSTITUTE OFFICIAL ARRL VIEWS OR POLICY.

10. Re: It's time to phaseout the FM!

From: "Battles, Brian, WS1O" <bbattles@arrl.org>
Date: Thu, 01 Sep 94 12:59:00 EDT
To: netsig <netsig@tcet.unt.edu>
Message-ID: <2E660886@arrl.org>
Rendered body type: text/plain

>>>   I am sure you realize there is a lot more
>>> to a digital communication channel than receiver
>>> front end noise...

>> Its an Italian joke, Karl. Isn't it?

> I hope so, or I won't hire any Italian educated EE's...hi

  Jeez, if it isn't, I'm woried about that guy. And if it is,
and no one laughs, then participating in Internet conferences
is scarier than I thought!

   Smile and have an exceptional weekend!

 CUL es 73 de BB
 ____
 Brian Battles, WS1O   The World's Foremost Authority

 QST Features Editor, ARRL HQ
 Internet bbattles@arrl.org Compu$erve 70007,3373
 MCI   215-5052   Amprnet   ws1o@ws1o-2.ampr.org
  -
    ALL COMMENTS ARE MY OWN PRIVATE, PERSONAL REMARKS AND

IN NO WAY CONSTITUTE OFFICIAL ARRL VIEWS OR POLICY.

11. Re: TAPR-2 TNC Mods; Bit

From: "Rick Whiting" <Rick_Whiting@ATK.COM>
Date: 1 Sep 1994 14:38:27 -0600
To: "TAPR Networking Special Intere" <netsig@tcet.unt.edu>
Message-ID: <199409011930.OAA08248@ATK.COM>
Rendered body type: text/plain

Reply to: RE>>TAPR-2 TNC Mods; Bit
I'd like a copy. Fax to Rick Whiting at 612-931-5735. Thanks de Rick, W0TN.

Date: 9/1/94 2:26 PM
To: Rick Whiting
>From: TAPR Networking Special Intere
>From: Klarsen <klarsen@acca.nmsu.edu>
Subject: Re: TAPR-2 TNC Mods; Bit
To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
Date: Thu, 1 Sep 1994 08:28:27 -0600 (MDT)

I have Bdale's Modifying the Kantronics DE-1200 for Full Duplex
Repeater operation in big letters I got from Bdales www server. I can fax
these to you (3 pages) if you send me your number.

-karl

12. Re:(2) TAPR-2 TNC Mods; Bit

From: tmoulton@ram.net
Date: Thu, 01 Sep 94 22:02:57 EDT
To: netsig@tcet.unt.edu
Message-ID: <05285.15021573@RAMail>
Rendered body type: text/plain

>From: net_sig@tcet.unt.edu
>Message-Id: <9409012011.AA191048@tcet.unt.edu>
>Subject: Re: TAPR-2 TNC Mods; Bit
>To: tmoulton@ram.net
>Date: Thu, 1 Sep 94 15:11:41 CDT
>Reply-To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
>
>From: "W. M Wood - The Signal Group" <mikewood@mercury.interpath.net>
>Subject: Re: TAPR-2 TNC Mods; Bit
>To: netsig@tcet.unt.edu
>Date: Thu, 1 Sep 1994 11:23:34 -0400
>
>Greg,
>
>Paccomm is the "non-responsive" group I was referring to regarding
>the EPROM. Dorothy and TAPR have been most responsive , courteous and
>helpful. I referrred to the TNC-2 as TAPR-2 TNC which is technically
>in error and probably confused many who read my posting.
>
>My apologies!
>
>
>Mike Wood   Internet: mikewood@mercury.interpath.net
>The Signal Group   Amateur Radio: NT4O
>P.O. Box 1979   ***Avoid company disclaimers by owning the company ***
>Wake Forest, NC 27588
>
>Phone: 919-556-8477   Fax: 919-556-0115
>
That is because they have an old eprom image with foggy docs.

what they had was a Frame Regenerator, it was something I did back in 1988/89
for a local repeater. It provided a busy tone and repeated all good frames.

i stopped providing it to paccomm when i made a commerical sale and that was
part of the agreement.

we have moved on to better things so maybe i can provide updates again...

but the bit regenerator has some advantages...

tom

13. Re: TAPR-2 TNC Mods; Bit

From: GHAUGE@delphi.com
Date: Thu, 01 Sep 1994 22:53:51 -0400 (EDT)
To: netsig@tcet.unt.edu
Message-ID: <01HGM56IDQAGA8C7QI@delphi.com>
Rendered body type: text/plain

Mike - I have seen very little on bit regineration for 1200 baud. PACCOM may
be your answer, however I will look through some information that I have and
see if I can supply you with a better answer////gary///

14. Re: TAPR-2 TNC Mods; Bit Re: TAPR-2 TNC Mods; Bit

From: Paul Hellenberg <KS9K@mixcom.com>
Date: Fri, 2 Sep 94 7:25:51 CDT
To: netsig@tcet.unt.edu
Message-ID: <199409021225.HAA12157@mixcom.mixcom.com>
Rendered body type: text/plain

Good Morning Karl
I would apprecite a copy of the full duplex info we are trying to get
something going in the Chicago metro area for packet-cluster. Thanks Paul
--
KS9K@mixcom.com
KS9K Paul Hellenberg
Voice 414 554-7300 Fax 414 554-8217

15. Re: TAPR-2 TNC Mods; Bit

From: bm@hydra.carleton.CA (Barry McLarnon VE3JF)
Date: Fri, 2 Sep 94 9:12:40 WET DST
To: netsig@tcet.unt.edu
Message-ID: <9409021312.AA14368@hydra.carleton.CA>
Rendered body type: text/plain

> From: ron@chaos.eng.wayne.edu (Ron Atkinson N8FOW)
> Subject: Re: TAPR-2 TNC Mods; Bit
> To: netsig@tcet.unt.edu
> Date: Thu, 1 Sep 1994 02:40:11 -0400 (EDT)
>
> > 2) I was told that the TAPR journals had several articles on
> > 1200 baud bit regeneration mods for TAPR-2 clones. I purchased all
> > of the TAPR back issues. Almost nothing regarding the subject
> > was contained within them. Lot's of mention by people using
> > packet rengerating repeaters (mostly 9600 baud) or advocating
> > the use of them, but nothing in the way of how to mod a TAPR-2
> > TNC for 1200 baud bit regeration.
>
> The TAPR PSR January 1992 Issue #45 has an article titled:
>
> Modifying the Kantronics DE-1200 for Full-Duplex Operation
>
> This is the same principle in modifying the tnc for bit regeneration. Also
> ARRL/CRRL 9th Computer Networking Conference papers (you know, the one
> that people in this group say is out of publication :-) also has an article
> titled:
>
> Digital Regenerator Modification for the TNC-2A.
>
> This explains how to do it also. It's only one IC chip that you can install
> on the modem disconnect header and make it an instant bit regenerator for
> a repeater. The 9th CNC paper uses a 4053 and the one in the TAPR PSR
> uses a 74HC157.

A note for anyone building a bit regen repeater that also has a local packet
switch connected: the design in the TAPR article does it right, but the one
in the CNC paper does it wrong. The problem is in the data selector which
determines whether the data being transmitted by the repeater comes from the
repeater or from the switch. In the CNC design, this data selector is
controlled by the DCD signal from the repeater demod. This means that when
the switch is transmitting, the merest flicker of DCD activity (falsing, or
maybe a station transmitting that is misconfigured or can't hear the repeater
too well) will completely mutilate the outgoing packet. The TAPR design
correctly controls the data selector with the RTS signal from the switch.
For keying the repeater, all you need is the logical equivalent of ORing the
RTS from the switch and the DCD from the repeater demod. The switch also
needs to see this DCD signal and be set up for half-duplex, so that it will
respect CSMA and not stomp on repeater users.

Building a 1200bps bit regen repeater out of a TNC is easy, and very
effective. It's simply amazing how rare they are. I suppose it's because

of the hard part: finding cavities, finding duplex frequency pairs for
packet, and convincing frequency coordination bodies that they are *needed*
for packet.

Barry

--
  Barry McLarnon VE3JF/VA3TCP | Internet: bm@hydra.carleton.ca
  Ottawa Amateur Radio Club | AMPRnet: barry@va3tcp.ampr.org
  Packet Working Group | FreeNet: aa187@freenet.carleton.ca

16. Re: TAPR-2 TNC Mods; Bit

From: srbible@cs.nps.navy.mil (Steven R. Bible)
Date: Fri, 2 Sep 94 14:09:44 PDT
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <9409022109.AA17386@taurus.cs.nps.navy.mil>
Rendered body type: text/plain

>From: Klarsen <klarsen@acca.nmsu.edu>
>Subject: Re: TAPR-2 TNC Mods; Bit
>To: TAPR Networking Special Interest Group <netsig@tcet.unt.edu>
>Date: Thu, 1 Sep 1994 08:05:16 -0600 (MDT)
>
>
>   Pac Comm can be contacted by calling 1-800-486-7388 and asking.
>
>-karl
>

Be CAREFUL...

If you call their 800 number with a technical question the kind lady who
answers will direct your to call their "other" (non-800) number. Then she
will answer you on that "other" number and direct your call to technical
support.

I have not had good responses from these people. Even the question I was
trying to resolve they could not help me with (it was with their products).
They kept insisting it was "this" way, but it was clear to me by studying
the schematics it was "that" way. I've lost faith with PacComm.

Steve, N7HPR

srbible@cs.nps.navy.mil
Naval Postgraduate School, Monterey, CA 93943

17. PSR Deadline Issue #56

From: root (The Super-user)
Date: Fri, 2 Sep 94 17:49:54 CDT
To: bbssig, netsig
Message-ID: <9409022249.AA162751@tcet.unt.edu>
Rendered body type: text/plain

Forwarded message:
>From gjones@tenet.edu Fri Sep 2 17:40:06 1994
>From: Greg Jones <gjones@tenet.edu>
Message-Id: <199409022239.RAA28865@Kay-Abernathy.tenet.edu>
Subject: PSR Deadline Issue #56
To: tapr-bb@tcet.unt.edu (TAPR-BB mailing)
Date: Fri, 2 Sep 1994 17:39:54 -0500 (CDT)
X-Mailer: ELM [version 2.4 PL23]
Content-Type: text
Content-Length: 920

Deadline for the next issue of the TAPR PSR will be September 15th, 1994.

Please driect any articles or information to psr@tapr.org or
bobh@tcet.unt.edu.

TAPR is looking for any technical articles yo umight have on current or
ongoing projects. In addition, the focus of the next issues will be BBS
issues, so if you have something for that, please submit it.

Also, TAPR still has an open invitation to any Regional Packet Group that
wishes to submit information regading regional activity.

Cheers - Greg

```
------------------------------------------------------------------------------
President -- Tucson Amateur Packet Radio Corp
------------------------------------------------------------------------------
TAPR Office (817) 383-0000  | Internet: gjones@tenet.edu
------------------------------------------------------------------------------
```

18. Re: TAPR-2 TNC Mods; Bit

From: Jeff King <wb8wka@wb8wka.ampr.org>
Date: Fri, 02 Sep 94 20:20:44 UTC
To: netsig@tcet.unt.edu
Message-ID: <2799@wb8wka.ampr.org>
Rendered body type: text/plain

Hi:

I've used the Jack Taylor TNC-2 mod for a regenerating repeater for about 2 years now in the Detroit area (441.125/446.125) and it does seem to work. Did noticed some strangness in it, and relative to what Barry said in a earlier message, I'll check into it. But it does work and certainly is not expensive. Going to be doing a second one on 2 metres in the near future so I'll see what can be done to fix the problem Barry reported (the 440 one will be going 9.6k bit regenerating)

The CNC 9th (the one I talk about above) did not have a FIFO in it. As such, there may be some bit jitter but I've not had a problem with it.

The site the repeater is at requires can's on everything so the extra cost is not much of a issue as contrasted with a simplex system. I believe there is also a full duplex system in Tucson AZ as well that is 1.2kbaud.

73

Jeff WB8WKA   wb8wka@hamgate.merit.edu

19. Re: TAPR-2 TNC Mods; Bit

From: Bdale Garbee <bdale@chunks.gag.com>
Date: Fri, 2 Sep 1994 23:11:27 -0600
To: "TAPR Networking Special Interest Group" <netsig@tcet.unt.edu>
Message-ID: <199409030511.XAA05975@chunks.gag.com>
Rendered body type: text/plain

: The CNC 9th (the one I talk about above) did not have a FIFO in it. As such,
: there may be some bit jitter but I've not had a problem with it.

At 1200 baud, timing jitter just isn't an issue worth dealing with. At 9600 or faster you'd like to, and the TAPR 9600 modem with bit regenerator does the right thing.

73 - Bdale, N3EUA

20. IMPORTANT - NETSIG RELOCATION

From: Greg Jones <gjones@tenet.edu>
Date: Sun, 4 Sep 1994 20:07:52 -0500 (CDT)
To: netsig@tcet.unt.edu (NETSIG mailing)
Message-ID: <199409050107.UAA01265@Kay-Abernathy.tenet.edu>
Rendered body type: text/plain

```
****                            ****
****  IMPORTANT -- PLEASE READ  ****
****                            ****


NETSIG, BBSSIG, and TAPR-BB Relocation
--------------------------------------

The NETSIG, BBSSIG, and TAPR-BB mail lists will be relocating back to their
permanent home on TAPR.ORG.

These lists were moved to TCET.UNT.EDU after a mail problem with our host
feed in Tucson during June.  The TAPR.ORG system has been moved to a
permanent Internet location, which no longer presents this problem.  With
the creation of the new TAPR.ORG system, we are working on consolidating
TAPR information feeds.

In addition, the new listproc software works much more reliably than the
current hacked software that was done to maintain the current lists.

These lists (located on TCET) will be phased out on Friday Sept 16th.
```

Messages posted, after Wednesday, Sept 7th, will be forwarded to the new
lists located @tapr.org.

Due to a difference between how the current and new list software operate,
subscribers will need to subscribe to the relocated lists.

subscribe

To subscribe to the relocated mail lists send a message to
`listserv@tapr.org` with the following line(s) in the body of the message:

subscribe list full_name

Example:
subscribe bbssig FirstName LastName
subscribe netsig FirstName LastName
subscribe tapr-bb FirstName LastName

Note: The Listproc uses the From: line of the incoming mail subscription to
set the return e-mail path. If you have to support something other than
what is sent in your From: line, please send mail to wd5ivd@tapr.org and let
me know what needs to be supported. If you have more than one mail address
you send messages from, you will need to send those to wd5ivd@tapr.org to
add those as aliases to your entry.

unsubscribe

There is no need to unsubscribe from the TCET mail lists. This information
is for later reference. To unsubscribe later from the mail lists send a
message to `listserv@tapr.org` with the following line in the body of the
message:

signoff bbssig
signoff netsig
signoff tapr-bb

Archives

Past messages from the mail lists are available in the TAPR.ORG archives.
Send mail to `listserv@tapr.org` with the following in the message body:

index tapr/mail_list

Examples:
index tapr/netsig
index

Help

To get help, send mail to `listserv@tapr.org` with `help` in the message
body. The new Listproc software does a lot of things that our previous and
current software did not support.

If you have any questions or concerns, send mail to wd5ivd@tapr.org

----
Tucson Amateur Packet Radio
8987-309 E Tanque Verde Rd #337 * Tucson, Az * 85749-9399 * 817-383-0000

21. multi-user packet software??

From: cbremmer@fergus.cfa.org
Date: Sun, Sep 11, 1994 04:35:55 PM PDT
To: netsig@tapr.org
Message-ID: <9409112146.AA09654@fergus.cfa.org>
Rendered body type: text/plain

Hi name here is Chris,

I would like to start up a digital net and was wondering if there is any packet
software available that has multi-user capabilities ,as in a conference bridge.

The simpler the better, and if you know of any please include ftp site or bbs to
download it from.

Thank you much,

Chris   N0SHR

22. Re: multi-user packet software??

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Sun, 11 Sep 1994 16:58:09 -0600 (MDT)
To: netsig@tapr.org
Message-ID: <Pine.3.89.9409111657.A22570-0100000@kazak>
Rendered body type: text/plain

On Sun, 11 Sep 1994 cbremmer@fergus.cfa.org wrote:

> Hi name here is Chris,
>
> I would like to start up a digital net and was wondering if there is any packet
> software available that has multi-user capabilities ,as in a conference bridge.
>
> The simpler the better, and if you know of any please include ftp site or bbs to
> download it from.
>
> Thank you much,
>
> Chris   N0SHR
>

Hi Chris, there are a lot of free software that does what you want. I suggest that the simplest is the x1j node that you place in a simple tnc-2 TNC like the mfj 1270, and hook a radio to the tnc and you have a chat system capable of many connects.

This software is found 24 hours a day via ftp to: ftp.ucsd.edu and you will want to "graze" a bit. So do a cd hamradio and look at what's there. Then cd packet and do the same. Then cd tcpip and see what's there. Then cd incoming and look for x1j.zip or like that.

Just about all the nos tcpip software has a chat mode as well but it fails the "simple" test you made....hi

I hope this helped and have fun! 73, de k5di karl

23. Re: Multicast compatible hardware

From: Greg Jones <gjones@tenet.edu>
Date: Sat, 24 Sep 1994 09:26:36 -0500 (CDT)
To: netsig@tapr.org (NETSIG mailing)
Message-ID: <199409241426.JAA12638@Kay-Abernathy.tenet.edu>
Rendered body type: text/plain

Don't forget that all mail for NETSIG should be sent to NETSIG@TAPR.ORG and not TCET.UNT.EDU

Cheers - Greg

Date: Sat, 24 Sep 1994 07:14:47 -0600 (MDT)
From: Klarsen <klarsen@acca.nmsu.edu>
Subject: Re: Multicast compatible hardware

On Fri, 9 Sep 1994, TAPR Network Special Interest Group wrote:

> From: Jeff King <wb8wka@hamgate.merit.edu>
> Subject: Multicast compatible hardware
> To: netsig@tcet.unt.edu
> Date: Wed, 07 Sep 94 23:44:45 EST
>
> Hello all:
>
> I recently made a proposal to the Detroit area ip'ers for a
> high speed asyncronous packet system. (is there a better name?)
> I've attached that proposal here. Was wondering if anything
> like this exists yet and if I might get some critical review
> here. Thanks ahead of time.
>
> 73
>
> Jeff

Hi Jeff, been in Russia and just got back to your fine proposal. It is the best proposal I have seen for a city in need of fast packet

radio. I am in the country so look upon your problems as a class
project...hi

        With many users I think the scheme will work but the 250 kb
circuit may be a real problem for the user. For example the fastest data
I can pass through windows version 3.1 is 19kb. The solution may be large
buffers but they must be fast and overcome the problems inherant to the
dos comm port system. BOCA makes faster port cards but they are not cheap.

        But your proposal will see the light of day in El Paso TX. And if
we find anything out thats interesting it will get to you.

73, karl

24. Re: Multicast compatible hardware

From: David Stirrup <dstirrup@ozemail.com.au>
Date: Mon, 26 Sep 1994 15:30:00 +1000 (EST)
To: netsig@tapr.org
Message-ID: <Pine.3.89.9409261559.B11453-0100000@shell02.ozemail.com.au>
Rendered body type: text/plain

> Date: Sat, 24 Sep 1994 07:14:47 -0600 (MDT)
> From: Klarsen <klarsen@acca.nmsu.edu>
> Subject: Re: Multicast compatible hardware
>
> On Fri, 9 Sep 1994, TAPR Network Special Interest Group wrote:
>
> > From: Jeff King <wb8wka@hamgate.merit.edu>
> Subject: Multicast compatible hardware
> To: netsig@tcet.unt.edu
> Date: Wed, 07 Sep 94 23:44:45 EST
>
> Hello all:
>
> I recently made a proposal to the Detroit area ip'ers for a
> high speed asyncronous packet system. (is there a better name?)
> I've attached that proposal here. Was wondering if anything
> like this exists yet and if I might get some critical review
> here. Thanks ahead of time.
>
> 73
>
Jeff, I think it is a fine idea and wish I had thought of it! :-)

The real problem will still remain at the low speed end as packet
recovery is slow.   Another issue will be the speed of the connection
into a PC. I think that you would need to have a dedicated high speed
modem and processor card to plug into the PC which could include the
radio RX module as well.

I am thinking that this is feasable if we use say the Zilog Z-182 chip
which has a serial port 16550 emulation built in to itself to handle this
higher speed data stream. Problem with this scheme is that although it
is not a lot of hard work to build the hardware I would be unable to manage the
software side of things. I would be suprised if we could not build a card
for under USD$100.

Thanks for the suggestion as you have started me thinking...

Dave Stirrup, de VK2XDS
73.

25. help - not receiving netsig list

From: "Thomas Jim" <thomas_jim@macmail2.cig.mot.com>
Date: 27 Sep 1994 13:24:16 -0500
To: "netsig" <netsig@tapr.org>
Message-ID: <199409271823.AA22836@pobox.mot.com>
Rendered body type: text/plain

I have not received any messages lately from netsig.
Can you check to see if there is a problem?
Jim Thomas N9MOO thomas_jim@macmail2.cig.mot.com

26. Re: help - not receiving netsig list

From: tmoulton@ram.net
Date: Tue, 27 Sep 94 17:31:03 EDT
To: netsig@tapr.org
Message-ID: <05427.15021573@RAMail>

Rendered body type: text/plain

>From: netsig@tapr.org
>Date: Tue, 27 Sep 94 13:31 CDT
>Message-Id: <199409271823.AA22836@pobox.mot.com>
>Reply-To: netsig@tapr.org
>Sender: netsig@tapr.org
>To: netsig@tapr.org
>Subject: help - not receiving netsig list
>
>I have not received any messages lately from netsig.
>Can you check to see if there is a problem?
>Jim Thomas N9MOO thomas_jim@macmail2.cig.mot.com
i will forward the last item i have seen...

did you add yourself to the list when they changed the host?

27. Mitrek Radio 9600 baud Mods

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Wed, 28 Sep 1994 11:01:27 -0600 (MDT)
To: Sig Networking <netsig@tapr.org>
Message-ID: <Pine.SUN.3.90.940928105125.12256A-100000@kazak>
Rendered body type: text/plain

Hello, I got a package from Mel Whitten, K0PFX that contained his
modification tips for putting a Mitrek radio to work as a 9600 baud node.
He included a $5.00 bill to cover my expense for sending him the Bdale
Garbee work on the same subject. I had to again turn on my Mosaic system
and call the place in Colorado where I got it from. I again printed out
the information for Mel. I have an Optical Character Reader and decided
to see if I could convert Bdales printed file to a simple ascii file.

        It worked and here it is:

 Garbee and Garbee   August 1994

 Motorola Mitrek Radio Modifications for
 9600 Baud Service

 The Motorola Mitrek radios are readily available through
 commercial radio surplus channels, and provide a very reasonable
 platform for building robust 9600 baud packet links.

 Various groups have published modification instructions for the
 Mitrek series, however the modifications we found all involved
 sufficiently significant changes to the transceiver circuitry
 that the normal, analog tune-up procedures were invalidated.
 Since we are also using Mitrek radios for our VHF and UHF voice
 repeater RF decks, we were highly motivated to come up with a
 set of mods for 9600 baud packet that preserved a single tune-up
 procedure. We believe that the point of diminishing returns for
 tweaking the radio's IF path is low, therefore these mods are
 simple but effective.

 These modifications were developed by Derek Toeppen, WAOZTI,
 with inputs from Bdale Garbee N3EUA, and John Conner, WD0FHG.
 The work was done on behalf of the Pikes Peak FM Association.

 The following instructions assume that you have a Mitrek in
 front of you, and that you have a Mitrek manual to refer to for
 component placement, etc. Our local Motorola field service
 office had no trouble obtaining reprints of the manual for us at
 a reasonable price. All mods have been thoroughly tested with
 UHF Mitrek radios of the 3OW and 5OW variety, they should work
 on VHF radios as well, but we haven't tried it.

 Modifications for Simplex 9600 Baud
 Operation

 To feed the modulation signal directly into the TX channel
 element, we chose a method that does not require any
 modification of the PCB traces.

   Remove R50 1.
   Remove C502, C503, and C504.
   Remove R513, and R515.
   Jumper MIC HI Audio to Channel element pin 4.
   Short Jiunper from R501 through hole to R515 through hole.

The modulation signal can now be fed to the MIC HI pin (pin 1)
of the front panel control head connector.

No receiver modifications are required. Just make sure the
channel elements are enabled. For a single frequency radio,
just add jumper JU61 I to hard enable F 1.

Receiver audio is taken from the DET pin on front panel
connector pin I 1.

We make no modifications to the RF input/output, just let the
existing TX/RX relay do it's thing, and use the front-panel UHF
connector for your antenna connection.

Modifications for Repeater Operation

We have built one digital repeater using a 3OW UHF Mitrek
chassis. We have built several audio repeaters with both VHF and
UHF Mitrek chassis with both 3OW and 5OW chassis. The following
mods are for repeater operation, and are based on the 1200 baud
packet repeater we built. If you want a 9600 baud packet
repeater, combine the above mods with the following mods. If you
want either a 1200 baud packet repeater, or an audio repeater,
the following will be sufficient.

On the TX side, we remove R501, which prevents 9.5 volts from
appearing on the mic input. The modulation signal can then be
fed in to the MIC HI pin (pin 1) of the front panel control head
connector. Remember that the pre-emphasis and gain of the audio
path depends on the source impedance of the circuit driving it.
This impedance should be about 360 ohms.

On the RX side, the project is a bit more ambitious:

   Remove CRI. This keeps RX on when PTT is low (TX is on).
   Remove CR403. This prevents audio muting when the TX is on.
   Install JU61 1. This hard selects channel element #1 for both
   TX and RX.
   Remove CR604 and CR608. Install a jumper between node E
   (collector of Q406) and the cathode through hole of CR608.
   This makes a carrier detect signal available on the channel
   element #4 select line.

   Remove CR404. This prevents the muting of receiver audio when
   no carrier is present.

Receiver audio is now taken from one of the speaker outputs. The
audio will have de-emphasis. The audio level is determined by
the volume control.

To complete the project, we need to modify the RF cabling. Note
that the TX cable is short, don't waste any length when making
these modifications!

   Cut the RX and TX coax as close to the TX/RX relay as
   possible. Remove the TX/RX relay.
   Add SMA connectors to the TX and RX coax.

We chose SMA's because they fit the cable well, and we have
through-panel SMA to N connector widgets that make for a nice
installation when the Mitrek is mounted inside a rack-mount box.
Drilling holes in the top cover of the Mitrek to feed the SMA'ed
cables out at the appropriate places makes for a neat
installation.

The radio can be tuned using standard Mitrek procedures. Nothing
in these modifications alters those procedures.

---

tear here....

So save this message if you don't want to set up mosaic...

-karl k5di

28. Re: Mitrek Radio 9600 baud Mods

From: ron@chaos.eng.wayne.edu (Ron Atkinson)
Date: Wed, 28 Sep 1994 14:02:50 -0400 (EDT)
To: netsig@tapr.org
Message-ID: <9409281802.AA01381@chaos.NIS.chaos>
Rendered body type: text/plain

> Garbee work on the same subject. I had to again turn on my Mosaic system
> and call the place in Colorado where I got it from. I again printed out
> the information for Mel. I have an Optical Character Reader and decided
> to see if I could convert Bdales printed file to a simple ascii file.

Next time if you want to save a whole lot of time, fire up Lynx (text based URL browser) and when you select the document, like Bdales Mitrek mods, hit the letter P and you will have options of having the document saved to a local file on your drive, emailed to you as an ascii text file, or printed to the screen. I had an ASCII text file of the mod that looks identical to yours in a few seconds after accessing Bdales system.

--

Ron N8FOW

Internet : ron@chaos.eng.wayne.edu
atkinson@gordon-EMH2.army.mil

29. Welcome Back!

From: jra@ag9v.ampr.org
Date: Wed, 28 Sep 1994 13:32:39 -0400 (EDT)
To: netsig@tapr.org
Message-ID: <m0qq2rw-000EO1C@ag9v.ampr.org>
Rendered body type: text/plain

NetSIG has been a bit dead since the Great Listserver Move, so let me hereby declare that we're open for business!!!

Here's the monthly welcome message that we'll be sending out:

```
_____________________________________
 _________/   ____/   _/_____/ _/_____/
    _/     _/      _/ _/     _/ _/     _/
   _/     _/____/_/ _/_____/ _/_____/
  _/     _/      _/ _/       _/   _/
 _/     _/      _/ _/       _/     _/
_____________________________________
```

Welcome to the TAPR Regional Networking Special Interest Group Mailing List!

NETSIG is working to:
---
1. Establish a collection of networking case studies for the benefit of those implementing networks.

2. Establish a database of people interested in networking.

3. Get discussion going on how we're going to interconnect regional networks, and provide input to the ARRL 219 Committee.

4. Discuss the role of packet <--> internet gateways in the network scheme.

5. Deal with networking topics as they arrive.

Mechanics of the List

The NETSIG mailing list charter is to provide a forum for the exchange of information about packet radio networking and network building. News, hints & kinks, case studies, and such are welcome parts that we hope will become an important resource for those participating in the forum.

TAPR is committed to the success of the various SIG lists. All lists have tremendous potential, but TAPR does not want that potential to be lost.

The criteria for appropriate publication are simple: messages should 1) advance the discussion at hand, 2) not perpetuate one of our many Holy Wars (i.e., my OS is bigger than your OS, or "your protocol stinks because"), and 3) avoid personal attacks (FLAMES).

In addition, we wish to re-post traffic generated here on the PBBS network.

Therefore, refrain from using profanity, and do not use the forum to promote commercial activity. Please stay focused on the issues which relate to the purpose of the forum charter.

If a messages from individuals over time continue to abuse these standards, they will be removed from the list. If inappropriate messages are frequent o the point of problems, the mail list can become moderated at the discretion of the SIG chairperson.

Our hope is that SIG members will bear in mind the goals of the SIGs when posting messages, and that very few messages will be considered outside of these standards. If you feel that you must FLAME someone, do it via personal mail or use one of the many other places available to vent spleen. The forums are setup for positive, productive, cooperative discussions.

NETSIG Archive

Past messages from the NETSIG are availble in the TAPR.ORG archives. Send mail to `listserv@tapr.org` with the following in the message body:

index tapr/netsig

NETSIG Meetings

The NETSIG tries to meet three times a year:
   TAPR Annual Meeting
   Dayton
   ARRL Digital Communications

A Final Word

Thanks for being involved in NETSIG! We'd like this to become the forum that helps shape the growing national packet radio network, but we can't do that without input from the people who are doing the building.

73, John Ackermann   AG9V

Reaching me:
Email at work: jra@lawdept.daytonoh.ncr.com.
Email at home: jra@ag9v.ampr.org (via MX record)
Packet radio: AG9V@N8ACV.#DAY.OH.USA.NOAM.
Home phone: (513) 372-7884 (before 9:30PM Eastern, please).

30. RE: Mitrek 9600-baud mods

From: "Battles, Brian, WS1O" <bbattles@arrl.org>
Date: Wed, 28 Sep 94 16:20:00 EDT
To: netsig <netsig@tapr.org>
Message-ID: <2E89D213@arrl.org>
Rendered body type: text/plain

On Wednesday, September 28, 1994 12:11, Klarsen <klarsen@kazak.NMSU.Edu> wrote:

> [some stuff deleted]
> Motorola Mitrek Radio Modifications for 9600-Baud Service
> [mods deleted]

   Just FYI, Bill Lyman, N1NWP, of Wallingford, Connecticut (lyman@a3bee2.radnet.com), has modified a number of Motorola Mitrek T-74 UHF transceivers to make the local 9600-baud TCP/IP repeaters (Switches). I have no idea specifically what his modification/construction procedures are, but he might have additional ideas, if anyone is interested.

    I know the Bethany (Connecticut) Switch/Repeater (44.88.3.1, I believe) cranks out the TCP/IP packets at 9600 with ease, and running as a duplex repeater is mighty quick! He uses two Mitreks (back-to-back), a set of cans and an antenna, and away it goes!

   BTW, Bill's usually on the lookout for inexpensive, *working* Motorola Mitrek T-74 UHF transceivers. We're trying to put more Switches and repeaters up, and Bill's been modifying and preparing such radios for sale (at cost) to local amateurs who want to join us running TCP/IP on 440 MHz at 9600 bauds. Pass the word if you know a good _economical_ source!

   CUL es 73 de BB
 _____

```
Brian Battles, WS1O    The World's Foremost Authority

QST Features Editor, ARRL HQ
Internet  bbattles@arrl.org  Compu$erve  70007,3373
MCI       215-5052           Amprnet     ws1o@ws1o-2.ampr.org
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
   ALL COMMENTS ARE MY OWN PRIVATE, PERSONAL REMARKS AND
    IN NO WAY CONSTITUTE OFFICIAL ARRL VIEWS OR POLICY.
```

31. RE: Mitrek 9600-baud mods

```
From: Klarsen <klarsen@acca.nmsu.edu>
Date: Thu, 29 Sep 1994 07:31:35 -0600 (MDT)
To: netsig@tapr.org
Message-ID: <Pine.SUN.3.90.940929072903.28203A-100000@kazak>
Rendered body type: text/plain
```

On Wed, 28 Sep 1994, Battles, Brian, WS1O wrote:

```
>
> On Wednesday, September 28, 1994 12:11, Klarsen <klarsen@kazak.NMSU.Edu>
> wrote:
>
> > [some stuff deleted]
> > Motorola Mitrek Radio Modifications for 9600-Baud Service
> > [mods deleted]
>
>    Just FYI, Bill Lyman, N1NWP, of Wallingford, Connecticut
> (lyman@a3bee2.radnet.com), has modified a number of Motorola Mitrek T-74 UHF
> transceivers to make the local 9600-baud TCP/IP repeaters (Switches). I have

        Brian, if you can get Bill's method for doing this posted here in
this sig it will wind up in my batch of 9600 baud stuff. Sure would like it.

-karl k5di
```

32. Re: RE: Mitrek 9600-baud mods

```
From: tmoulton@ram.net
Date: Thu, 29 Sep 94 10:40:24 EDT
To: netsig@tapr.org
Message-ID: <05437.15021573@RAMail>
Rendered body type: text/plain
```

Ok, I'll ask the question I bet a lot of people are asking...

What is the prices you guys have seen them for?

tom

33. Re: Mitrek 9600-baud mods

```
From: Bdale Garbee <bdale@chunks.gag.com>
Date: Thu, 29 Sep 1994 09:23:45 -0600
To: netsig@tapr.org
Message-ID: <199409291523.JAA04603@chunks.gag.com>
Rendered body type: text/plain
```

In article <05437.15021573@RAMail> you wrote:
: What is the prices you guys have seen them for?

I've paid anywhere from $75 - $125 each for UHF and VHF Mitreks in the 30W or 50W variants, plus shipping, for untested units. I figure $50 - $60 to get the channel elements recrystalled and temperature compensated, and currently am using Bomar for UHF and ICM for VHF, based on experience with their ability to get the temperature compensation right the first time. May be less important to some of you, but my sites tend to be harsh.

Last time I checked, the local Motorola field office could get us manual reprints for under $20 each, and their secretary handed me a couple of keys out of her drawer when I walked in for the manual and asked.

Find a copy of Mobile Radio Technology and troll the ads in the back. Make sure you ask for a set of channel elements, you may want a cut-off cable which they'll probably want $5 or so for (the mating connector is a bit odd), and for some mounting schemes getting the baseplate is important, and typically no charge if you remember to ask for it. Can't think of anything else offhand.

73 - Bdale, N3EUA

34. Re: RE: Mitrek 9600-baud mods

From: jra@ag9v.ampr.org
Date: Thu, 29 Sep 1994 11:51:58 -0400 (EDT)
To: netsig@tapr.org
Cc: netsig@tapr.org
Message-ID: <m0qqNm2-000EO1C@ag9v.ampr.org>
Rendered body type: text/plain

You (tmoulton@ram.net) write:
>
>Ok, I'll ask the question I bet a lot of people are asking...
>
>What is the prices you guys have seen them for?
>
>tom

We got a bunch of 30 W UHF Mitreks, cut for Canadian band (406-420 MHz), for
$140 each from C.W. Wolfe in Montana. They also have 40W VHF (136-148 MHz)
units for about $90.

I'm told that this price is too high for the UHF ones, but on the other hand
they're bench tested and include a set of channel elements. And all seven of
the ones we've bought have been very clean.

John
--
John Ackermann   AG9V
Internet: jra@ag9v.ampr.org
Packet: AG9V@N8ACV.#DAY.OH.USA

35. Re: RE: Mitrek 9600-baud mods

From: "Battles, Brian, WS1O" <bbattles@arrl.org>
Date: Thu, 29 Sep 94 15:51:00 EDT
To: netsig <netsig@tapr.org>
Message-ID: <2E8B1AA0@arrl.org>
Rendered body type: text/plain

TM> Okay, I'll ask the question I bet a lot of people are asking...
TM>
TM> What is the prices you guys have seen them for?

  Bill Lyman, N1NWP, was telling me he recently bought one for
$300 to $350, but he doesn't buy anything unless it's in above-average
fully *working* condition.

 CUL es 73 de BB
 ____
 Brian Battles, WS1O   The World's Foremost Authority

 QST Features Editor, ARRL HQ
 Internet bbattles@arrl.org Compu$erve 70007,3373
 MCI   215-5052   Amprnet   ws1o@ws1o-2.ampr.org
  -
    ALL COMMENTS ARE MY OWN PRIVATE, PERSONAL REMARKS AND
     IN NO WAY CONSTITUTE OFFICIAL ARRL VIEWS OR POLICY.

36. RE: Mitrek 9600-baud mods

From: "Battles, Brian, WS1O" <bbattles@arrl.org>
Date: Thu, 29 Sep 94 16:42:00 EDT
To: netsig <netsig@tapr.org>
Message-ID: <2E8B2827@arrl.org>
Rendered body type: text/plain

>> On Wednesday, September 28, 1994 12:11, Klarsen <klarsen@kazak.NMSU.Edu>
wrote:
>>
>> > [some stuff deleted]
>> > Motorola Mitrek Radio Modifications for 9600-Baud Service
>> > [mods deleted]
>>
>>   Just FYI, Bill Lyman, N1NWP, of Wallingford, Connecticut
>> (lyman@a3bee2.radnet.com), has modified a number of
>> Motorola Mitrek T-74 UHF transceivers to make the local
>> 9600-baud TCP/IP repeaters (Switches)...

>   Brian, if you can get Bill's method for doing this posted here
> in this sig it will wind up in my batch of 9600-baud stuff. Sure would
> like it.

  The only thing I can do is shoot Bill a note and ask him if he could
mail the instructions to me, you or the list...lessee wot he sez!

--BB

37. RE: RE: Mitrek 9600-baud mods

From: "Thomas Jim" <thomas_jim@macmail2.cig.mot.com>
Date: 29 Sep 1994 16:37:47 -0500
To: netsig@tapr.org
Message-ID: <199409292138.AA23316@pobox.mot.com>
Rendered body type: text/plain

A local Chicago area dealer in used commercial radios has been selling Mitrek 450 MHZ 50 watt radios for $100 and VHF high band (2m) 110 watt for $125. I asked him to get me 6 403-420 range Mitreks so that I could use them on my 430.35 MHz LAN and he obtained them for me in a week and sold them to me for $90 each. And along with those I bought one of the 110 watt 2m Mitreks which he went down to $110 since I was buying so much. These all came with a pair of
elements. And I got him to throw in a Mitrek cable stub so I could hook them all up for packet radios. I have not had time to try the 9600 mod on them yet. I bought a new Motorola Mitrek UHF & VHF manual from Motorola Parts over the phone and got them within 2 days.
The dealer suggested a place called Frequency Management to get crystals to replace the crystals in the elements but I havent done that yet. These will be indoors in homes so I dont expect a lot of temperature drift.
    Jim Thomas N9MOO   thomas_jim@macmail2.cig.mot.com

38. RE: Mitrek 9600-baud mods.

From: wb9mjn@uugate.wa7slg.ampr.org
Date: Thu, 29 Sep 94 19:22:55 mdt
To: netsig@tapr.org
Message-ID: <14680@uugate.wa7slg.ampr.org>
Rendered body type: text/plain

Hi, I ve played with the Mitreks for 9600 baud, amoung other radios. They are great, once u get the IF set up right. The stock filters have are for 12.5 KHz Channels. This is the two way standard. And since the optimun BW for K9NG modulation, with a non-dispersive filter is equal to the Baud Rate, in hertz, and since radio IF filters have all sorts of group delay, especially at the edges of the passband, where the K9NG signal spends most of its time, it should be apparent that the stock filters wont work well. And, not too suprising, that s been my experience with the stock MITREK recievers. Since to have another station 12.5 Kc away from ur reciever, ur IF BW needs to be down around 9 Kc. And that s about what they are, and the K9NG modulation needs a wider IF filter than 9 Kc. If u had a FIR filter, 9.6 Kc plus the frequency error between transmitter and reciever (or the sum of the maximun expected error of the reciever and the transmitter). Since the frequency errors at UHF , for good radios, like these Mitreks is around a Khz, with a FIR filter u would need a 12 Kc IF BW. But, the crystal filters in these Radios are very dispersive, with loads of group delay right on the band edges, right during the time where the K9NG signal resides, and puts most of its energy. So, with the crystal filters, the BW needs to be even bigger. 15 Kc is a good number from my experience.

  Luckily, u can get such filters for the Mitrek. Details on this are in the K0PFX notes, which I colaborated on.

  The difference experienced here in the Packet Probability of Reception were on the order of 10 to 1, using the stock filters, and the replacement 25 Kc channel filters. This was over a 10 mile path non-line of site path to the N4PCR qth, from my old qth. I had a 19 element Beam, PCR s station had a yagi pointed generally in K9VXW's and my direction. The N4PCR station was 2 watts. That is, N4PCR had a short Yagi, 6 or 7 elements.

  K0PFX concurred that their links , which they had pulled the MITREK s out of due to poor performance, did work with the 25 Kc Channel IF Modified MITREKS. Now, this is not to say if u have line of site, and more signal than u need to quiet the reciever, u might not get 80 or 90 percent Packet Probability of Reception. But if ur signals are down there with that Fresnel loss on them, like most people's signals are, than you will want to do these things right, and make the appropriate IF filter modifications. We also tried one of the IF filter mods published in PSR, that recommended taking out some of the IF cans. The BW did improve, but the poles of the 8 Kc BW If Strip, whcih the remaining IF filter can(s) were part of were still causing too much dispersion on the 9600 baud signal. A good way to judge these things is to run two radios on the bench with shielded dummy loads. There should not andy missed packets at all, ever, with this situation. Try it for 100 s if not thousands of 256 byte packets. There should not be ANY misses. In this situation the misses are not going to be due to noise. They can only be due to signal corruption by IF and other circuits.

73, Don. wb9mjn%wb9mjn.ampr.org@wb9uus.bradley.edu

39. Re: Mitrek 9600-baud mods

From: Jack Taylor <n7oo@huachuca-emh8.army.mil>
Date: Fri, 30 Sep 94 9:12:49 MST
To: netsig@tapr.org
Message-ID: <m0qqkfO-00021jC@dptspd.sat.datapoint.com>
Rendered body type: text/plain

There are a number of uhf mitreks around here operating at 9k6 with minimal mods performed. However these are all mountain-top line-of-sight sites and they seem to work well. For weak signal paths I agree that the K0PFX/WB9MJN IF mods are desirable. I have modified three of the uhf mitreks here so's to get the extra margin. The 25 KHz wide filters from Digi-key cost approximately $7 ea in lots of less than 10 and 4 filters are required for each radio. This is a simple mod to perform, just unsolder the original filters and solder in the new ones, then perform an alignment touch-up.

I have converted a low uhf mitrek for full duplex operation. This is NOT a trivial task and requires a good spectrum analyzer. Unlike the older micors which have separate rx and tx boards, the mitrek uses a single board. On full duplex, nasties from the rx oscillator chain gets into the tx injection and creates fairly high level spurs around the transmitter output. These can be tamed with trial and error bonding and grounding while observing the spectrum analyzer. Not a quick process.

The difficult/costly part is in spliting out the antenna ports. I removed the antenna relay and installed two runs of mini-hardline, one to the rx input and one to the tx output. I used type N fittings with SMA adaptors going to the mini-hardline. This is expensive. But I felt for the shielding and isolation it provided within the cramped confines of the mitrek it was worth it.

The easy solution for full duplex with the mitreks is to simply use two radios. The separate radios provide good isolation and shielding. The radios are small, so they don't take up much space. This approach also gives the advantage of having a standby spare in case of rx or tx failure.

73 de Jack

40. Re: Mitrek 9600-baud mods.

From: aljkbe@attme.cnet.att.com (J. K. Bednar)
Date: 30 Sep 94 12:52:46 GMT
To: netsig@tapr.org
Message-ID: <2e8c0db30.3a11@alem1.attme.cnet.att.com>
Rendered body type: text/plain

Nice reply Don. How or where can we find the K0PFX notes?

Are there other suggestions for commercial 440 radio's that don't have the IF filter problems that Don mentions? I'm searching for a backup or replacement for our GE ExecII.

What commercial radio's are being used at 19.2K bps and above?

John, WB3ESS
aljkbe@attme.att.com

41. Re: Mitrek 9600-baud mods.

From: Greg Jones <gjones@tenet.edu>
Date: Fri, 30 Sep 1994 18:01:33 -0500 (CDT)
To: netsig@tapr.org
Message-ID: <199409302301.SAA04998@Kay-Abernathy.tenet.edu>
Rendered body type: text/plain

According to J. K. Bednar:
>
> Nice reply Don. How or where can we find the K0PFX notes?

TAPR will be publishing a book later this year (with a little luck) entitled "Commerical Land Mobile Radio Moficiations for 9600 baud Operations" or something like that. Will include Mel's stuff,plus MOCOM's, RCA-700, and a buch of others. I don't have my list handy. Mel is editing the book and last I heard we were waiting to here from Joe Borvitz in Oklahoma on his lastest update.

Cheers - Greg

October 1994

Original source file: netsig.9410
Source: http://ftp.tapr.org/tapr_history/SIG_Archives/netsig/mail_archive/netsig.9410

1. Re: Mitrek 9600-baud mods

From: Bdale Garbee <bdale@chunks.gag.com>
Date: Sat, 1 Oct 1994 12:32:41 -0600
To: netsig@tapr.org
Message-ID: <199410011832.MAA04196@chunks.gag.com>
Rendered body type: text/plain

In article <m0qqkfO-00021jC@dptspd.sat.datapoint.com> you wrote:
: I have converted a low uhf mitrek for full duplex operation. This is NOT
: a trivial task and requires a good spectrum analyzer.

Interesting. We've converted perhaps 4-5 Mitreks for full duplex operation, including at least one low uhf, one high uhf, and a some VHF units. In every case, we had none of the nasties you describe, and we *do* have access to good test equipment (working for HP has value from time to time!). The only RF problem we've had is one low uhf unit which put a smallish but annoying spur on the 2m 1200-baud radio next to it on the shelf at a user's house. He's swapped things around in the meantime, and I hope to get time to go poke at that radio before too long.

I have to assume there must be some variability in the radios.

: The difficult/costly part is in spliting out the antenna ports.

Agreed. However, we didn't think it was all that bad. We cut the two pieces of coax off at the relay, drill holes in the top plate to fish them out through rubber grommets near to where they originate on the boards, and put SMA's on the ends. We found some really neat chassis-mount N to SMA widgets somewhere, and have used those to present N connectors on the rear panel of the rack chassis we mount the Mitreks in. Oh, that probably deserves comment too, what we do is to put screws through the bottom mounting plate, nuts on the outside, then let the screws project down through holes in the rack chassis, and put wing nuts on the botton of the box. Ergo, to swap a Mitrek out of the rack box, we pull the two SMA's loose from the rear-panel feedthrough adapters, undo the mating connector with audio/DC from the front, reach under and undo the three wingnuts, and pop the Mitrek out. Best of both worlds, in that we have a very clean rack-mount module, but it's easy to swap the radios in a couple of minutes when we're in the oxygen-starved environment above 14k feet.

: But I felt for the shielding
: and isolation it provided within the cramped confines of the mitrek it was
: worth it.

The fact that we exit the coax near where it originates on the board through the top plate achieves a similar result. Your approach makes equal sense to me.

: The easy solution for full duplex with the mitreks is to simply use two
: radios.

We're too cheap. :-)

73 - Bdale, N3EUA

2. Re: Mitrek 9600-baud mods

From: "Gary McDuffie, Sr." <mcduffie@hannibal.wncc.cc.ne.us>
Date: Sat, 1 Oct 1994 14:58:44 -0600 (MDT)
To: netsig@tapr.org
Message-ID: <Pine.3.89.9410011430.A8701-0100000@hannibal>
Rendered body type: text/plain

On Sat, 1 Oct 1994, Bdale Garbee wrote:

> : The easy solution for full duplex with the mitreks is to simply use two
> : radios.
>
> We're too cheap. :-)
>
> 73 - Bdale, N3EUA

But think about it, Bdale. You have built-in backups!

Glad to see you active on here. Haven't seen you eyeball since the

C.Spgs digital conference several years ago.

Gary - AG0N
(mcduffie@hannibal.wncc.cc.ne.us)

3. TAPR Deviation meter

From: stewart@kepler.IFA.Hawaii.Edu (Christopher Stewart)
Date: Sat, 1 Oct 94 12:14:07 HST
To: netsig@tapr.org
Message-ID: <9410012214.AA17654@kepler.ifa.hawaii.edu>
Rendered body type: text/plain

I am hoping that someone here can give me some help on the TAPR Deviation
Meter.
In the manual, it says to use it with a scanner that has an I.F. of 10-11 Mhz
and if needed, the oscillator circuit could be changed to accomidate other
I.F.'s.
Well my I.F. is 48.5 Mhz. Can anyone tell me the formula to use and what c
componets exacly would need to be changed? Would I need to do new programing
on the EEPROM? Does the 256 eprom need to have a new code?
Basically, any help would be gratefully received. Tnx Chris/AH6GG.

4. Re: Mitrek 9600-baud mods.

From: Doug Holcombe <holcombe@mc.edu>
Date: Sat, 1 Oct 1994 21:48:13 +0600 (CST)
To: netsig@tapr.org
Message-ID: <Pine.3.05.9410012113.A11658-a100000@csc.mc.edu>
Rendered body type: text/plain

f]0F7BOn Fri, 30 Sep 1994, Greg Jones wrote:

> According to J. K. Bednar:
> >
> > Nice reply Don. How or where can we find the K0PFX notes?
> >
> TAPR will be publishing a book later this year (with a little luck)
> entitled "Commerical Land Mobile Radio Moficiations for 9600 baud Operations"
> or something like that. Will include Mel's stuff,plus MOCOM's, RCA-700, and
> a buch of others. I don't have my list handy. Mel is editing the book and
> last I heard we were waiting to here from Joe Borvitz in Oklahoma on his
> lastest update.
> >
> Cheers - Greg
> >

Doug Holcombe, KB5YZI   inet: holcombe@mc.edu
Mississippi College   (601)894-5210
Clinton, MS 39058

5. Re: Mitrek 9600-baud mods.

From: dme@ingersoll.com (Dave Ewaldz)
Date: Sat, 1 Oct 94 20:58:45 CDT
To: netsig@tapr.org
Message-ID: <9410020358.AA29002@ingersoll.com>
Rendered body type: text/plain

> TAPR will be publishing a book later this year (with a little luck)
> entitled "Commerical Land Mobile Radio Moficiations for 9600 baud Operations"
> or something like that. Will include Mel's stuff,plus MOCOM's, RCA-700, and
> a buch of others. I don't have my list handy. Mel is editing the book and
> last I heard we were waiting to here from Joe Borvitz in Oklahoma on his
> lastest update.
> >
Greg, is it possible to post a list of what mods you guys have compiled
on NETSIG? I know there are a bunch of mods floating around for Micors
and Maxars as well, and it would be nice to get the ones you guys don't
have included in the book. I could contribute some I have run across if
you don't already have them.

73 Dave N9HKM
--
 Dave Ewaldz   THE INGERSOLL MILLING MACHINE CO.
                      Rockford, Illinois, Usa
 Internet   - dme@ingersoll.com
 Amprnet   - n9hkm%n9hkm.ampr.org@ke9yq.ampr.org
 ax25 mail   - n9hkm@n9hkm.#ncil.il.usa.na

Ma-Bell - (815)-633-7031

6. Re: Mitrek 9k6 mods

From: Jack Taylor <n7oo@huachuca-emh8.army.mil>
Date: Sun, 2 Oct 94 8:30:46 MST
To: netsig@tapr.org
Message-ID: <m0qrSxp-0001LvC@dptspd.sat.datapoint.com>
Rendered body type: text/plain

Another thing I've done with my commercial radio mods is to add an internal speaker/control panel. If you cut a space for the crystal to protrude through, the mitrek will accept a thin aluminum sheet approximately 5.5" wide x 4" deep over the receive section.

Radio Shack sells inexpensive miniture speakers (I used the 3" size tho smaller might be better) and push button switches. Using a quarter inch drill I made an "8-star" pattern for the speaker grill. Surplus 25K ohm (or so) pcb trim pots were epoxied to the underside of the panel for squelch and volume control. The push-button switch was mounted for PTT. I used short lengths of ribbon wire to attach to the appropriate internal connection points. In order to reduce the spur content on the full-duplex unit it was necessary to insulate the receive crystal element from the panel with Scotch tape.

This type of mod makes a neat serviceable package for mobile units and in my opinion, well worthwhile. On a micor the controls can be mounted on a small panel near the rear, over the center control board and the speaker can be mounted over the audio output board.

Power/control connectors for the mitrek are the same as used with the older motrac and possibly with some versions of the mocom.

73 de Jack

7. Converting the TAPR 9600 modem for 19.2kB

From: jra@ag9v.ampr.org
Date: Sun, 2 Oct 1994 11:48:37 -0400 (EDT)
To: netsig@tapr.org
Cc: gjones@tenet.edu, jra@ag9v.ampr.org (John Ackermann)
Message-ID: <m0qrT9R-000EO1C@ag9v.ampr.org>
Rendered body type: text/plain

Howdy --

I just finished modifying one of the TAPR 9600 modems for use in our 19.2kB, no-scrambler, repeater. It was pretty easy, though there are still a few tweaks left to do.

The mods break down into 4 or so steps. We did this for a repeater, so these mods assume that the bit regenerator and internal clock options are installed.

1. Changing clocks for 19.2kB:

a. Bend up pins 5 and 7 on U6.

b. Use a 24 gauge jumper from the socket for pin 5, to the bent up pin at pin 7.

c. I had to set jumper JP3 closed for x16 clocking. I'm not sure if this is correct, as the pin 7 clock is 2x the pin 5 clock. Maybe a glitch in the PAL? Or something I'm overlooking...

2. Disabling the scrambler (no, I won't repeat the arguments about why we're doing it this way):

a. Remove U8, U10, and U11.

b. Either put a jumper between U11 pins 11 and 13, or make sure you do the DCD gating mod described below.

c. You can pick up unscrambled TXD at U11 pin 1.

3. Bypassing the analog bits to provide TTL I/O:

a. We've already done some of it. TXD comes out of U11, pin 1. RXD can be inserted at U4 pin 1.

4. Gating the RXD line with DCD (this is necessary with some drivers, notably the P1 version 1 card and the DataEngine, to prevent RXD chatter

on noise from driving the CPU crazy):

a. Two options here, depending on whether you like positive or negative logic.

    Either insert a 74HC00 in U11 with pin 12 bent up, and run a jumper from
    the bent pin 12 to U12 pin 9

    -or-

    Insert a 74HC08 in U11 with pin 12 bent up, and run a jumper from the
    bent pin 12 to U12 pin 10. I had an '08 handy, so this is what I did.

    This will quiet the RXD line on the TNC header (P3, pin 17) when DCD
    is not asserted. This seems like a good idea, even if your TNC/card
    doesn't need it.

5. Shortening the watchdog timer:

a. I reduced C22 from 100uF to 47uF, which results in about a 7 second
    timeout.

If you're duplicating all these steps, you can leave out U4, U5, U8, U10,
U11, U17, U18, U20, and U22. Note that you may replacing U11 with another
chip. You can also leave out all the associated components in the analog
part of the circuit.

Problems/things left to do:

At the moment, I'm bypassing all the input filtering to keep the square waves
as square as possible. I don't think this is necessary, and I may build the
RC filters at P1 back in.

I don't know what's going on, but the RX clock rate being fed to the TNC
header (P3) is running at 9600 Hz instead of 19.2. My guess is that this
is related to the need to close JP3. As a result, the attached TNC or PI
card needs to run with internal clocking and can't take advantage of the
clock on the modem.

If anyone has ideas on how to solve this problem, I'd sure be interested.

Finally, I wonder whether the time constant on the DCD circuit (C24/R25)
should be changed because of the doubled data rate. That might speed up
the DCD attack time to better match the bitrate. On the other hand, we
don't see <any> DCD falsing on noise with the current settings, so maybe
we should just leave well enough alone...

I'm very interest in comments anyone may have about these mods, particularly
suggestions on how to do them better!!!

73,

John AG9V

--
John Ackermann   AG9V
Internet: jra@ag9v.ampr.org
Packet: AG9V@N8ACV.#DAY.OH.USA

8. Re: TAPR Deviation meter

From: srbible@cs.nps.navy.mil (Steven R. Bible)
Date: Sun, 02 Oct 1994 12:27:59 -0700
To: netsig@tapr.org
Message-ID: <9410021930.AA25354@taurus.cs.nps.navy.mil>
Rendered body type: text/plain

>I am hoping that someone here can give me some help on the TAPR Deviation
Meter.
>In the manual, it says to use it with a scanner that has an I.F. of 10-11 Mhz
>and if needed, the oscillator circuit could be changed to accomidate other
I.F.'s.
>Well my I.F. is 48.5 Mhz. Can anyone tell me the formula to use and what
>componets exacly would need to be changed? Would I need to do new programing
>on the EEPROM? Does the 256 eprom need to have a new code?
>Basically, any help would be gratefully received. Tnx Chris/AH6GG.
>

On another note...

I am considering buying the TAPR Dev. Meter. Could some one tell me the

radios that can be used?

For instance, someone mentioned that they planned to you a Ramsey 2 meter
kit. I see that Ramsey has a $34.00 2 meter receiver. Will this work?

I suppose a scanner is the best choice since it can be tuned to any frequency.

Steve, N7HPR

srbible@cs.nps.navy.mil
Naval Postgraduate School, Monterey, CA 93943

9. More on the TAPR 9600 modem

From: jra@ag9v.ampr.org
Date: Sun, 2 Oct 1994 15:44:59 -0400 (EDT)
To: netsig@tapr.org
Cc: gjones@tenet.edu, jra@ag9v.ampr.org (John Ackermann)
Message-ID: <m0qrWqB-000EO1C@ag9v.ampr.org>
Rendered body type: text/plain

An update on my conversion of the TAPR modem...

We noticed that the RXD line loaded down the input a little bit. It appears
that the PAL at U14 has a fairly low input impedance. Things seemed to work
ok, but there's an easy way to add some buffering.

If you have the bit regen kit installed, there are three unused sections of
U3 -- a 74HC14 schmitt trigger -- available. I routed RXD to pin 1 of U3
and took the output at U3 pin 2 over to U4, pin 1. Now RXD has a high
impedance input, with the advantage of the schmitt trigger to boot. (Note:
this is only of value if you're driving the modem with a digital signal.)

And another quirk... it seems that the clock chip at U6 (the internal clocking
option) is touchy. Sometimes it doesn't oscillate, and after random hand-
waving it will take off. Anyone else experience this? The circuit looks
pretty straightforward; I'm almost wondering if I don't have a flaky crystal.

John

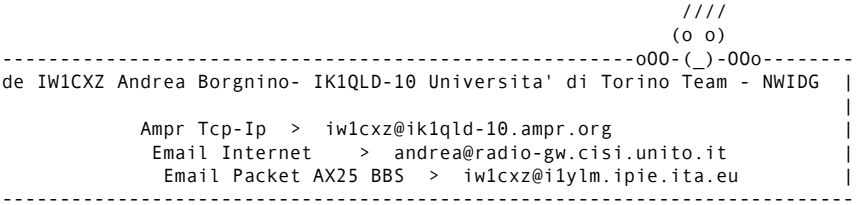
--
John Ackermann   AG9V
Internet: jra@ag9v.ampr.org
Packet: AG9V@N8ACV.#DAY.OH.USA

10. >> Telemetry use of Packet ?

From: iw1cxz@ik1qld-10.ampr.org
Date: Sun, 02 Oct 94 22:57:14 utc
To: netsig@tapr.org
Message-ID: <2809@ik1qld-10.ampr.org>
Rendered body type: text/plain

Hello All,there is anyone interessed in Telemetry sistem using packet
radio ???

Best 73 de IW1CXZ And


////
(o o)
oOO-(_)-OOo
73 de IW1CXZ Andrea Borgnino- IK1QLD-10 Universita' di Torino Team - NWIDG
Ampr Tcp-Ip > iw1cxz@ik1qld-10.ampr.org
Email Internet > andrea@radio-gw.cisi.unito.it
Email Packet AX25 BBS > iw1cxz@i1ylm.ipie.ita.eu

11. Re: More on the TAPR 9600 modem

From: Bdale Garbee <bdale@chunks.gag.com>
Date: Sun, 2 Oct 1994 23:07:34 -0600
To: netsig@tapr.org
Message-ID: <199410030507.XAA05715@chunks.gag.com>
Rendered body type: text/plain

In article <m0qrWqB-000EO1C@ag9v.ampr.org> you wrote:
: And another quirk... it seems that the clock chip at U6 (the internal clocking
: option) is touchy. Sometimes it doesn't oscillate, and after random hand-
: waving it will take off. Anyone else experience this? The circuit looks
: pretty straightforward; I'm almost wondering if I don't have a flaky crystal.

Probably something like that, or a bad cap. Never seen one of ours not start.

Bdale

12. Re: Mitrek 9600-baud mods

From: bruce@pixar.com (Bruce Perens)
Date: Sun, 2 Oct 94 22:38 PDT
To: netsig@tapr.org
Message-ID: <m0qrg64-000981C@mongo.pixar.com>
Rendered body type: text/plain

From: Bdale Garbee <bdale@chunks.gag.com>

> Last time I checked, the local Motorola field office could get us manual
> reprints for under $20 each, and their secretary handed me a couple of keys
> out of her drawer when I walked in for the manual and asked.

Sorry I'm a bit late with this thread, as I was on vacation. Motorola
has taken a very anti-amateur stance of late (starting the ads in QST and
73 last year they placed with pencil-sketches of emergency services
personnel glaring at the reader). They are upset about people who program
the frequency and power controlling ROMS of their newer radios without
paying a cut to Motorola. Because of this, most of the manuals that cost
$12 a while ago now cost $150. Call their parts order line at
1-800-422-4210 and check for yourself.

I hope their competitors start promoting open systems. It would then
be more difficult for them to maintain their new closed-system policy.

        Bruce Perens

13. RE: Mitrek 9600-baud mods

From: "Thomas Jim" <thomas_jim@macmail2.cig.mot.com>
Date: 3 Oct 1994 09:07:11 -0500
To: netsig@tapr.org
Message-ID: <199410031418.AA04869@pobox.mot.com>
Rendered body type: text/plain

I just bought some Mitrek manuals and they are still about $12 from the
Motorola Parts department here is Schaumburg. The manual increases must be for
the newer software programmed models.
 Jim Thomas N9MOO
thomas_jim@macmail2.cig.mot.com   ax25 : n9moo @ w9zmr.il.usa.noam

14. RE: Mitrek 9600-baud mods

From: bruce@pixar.com (Bruce Perens)
Date: Mon, 3 Oct 94 07:55 PDT
To: netsig@tapr.org
Message-ID: <m0qronm-00095cC@mongo.pixar.com>
Rendered body type: text/plain

Hm. They wanted > $100 for a Mitrek manual when last I checked. I'll
check again.

        Bruce

15. How do you ID a Regen Rpt?

From: <MITCHELL.T@OCF.compuserve.com>
Date: 03 Oct 94 17:34:16 EDT
To: <netsig@tapr.org>
Message-ID: <OCF_3441-16316@CompuServe.COM>
Rendered body type: text/plain

*Message:
From: MITCHELL.T at CCPO.KCPO
Date: 10/3/94 2:38PM
To: INTERNET:netsig@tapr.org at OCF_INFORM
Subject: How do you ID a Regen Rpt?
Contents:
This may be trivial, but....

How do you identify a regen repeater? We are going to set a 9600 UHF
regen system in service soon, and I was not sure how everyone else
handles the requirments. What about control? Do you use a seperate
controller?

Also, we were thinking about having a NOS box attached to the TNC serial

serial port and operate a POP Mail Server and Gateway. Any ideas? Should
this be off site?

Want your input?

Curiously,

Tim KA5RYF
Kansas City

16. Re: How do you ID a Regen Rpt?

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Mon, 3 Oct 1994 16:12:11 -0600 (MDT)
To: netsig@tapr.org
Cc: netsig@tapr.org
Message-ID: <Pine.SUN.3.90.941003160159.26313A-100000@kazak>
Rendered body type: text/plain

On Mon, 3 Oct 1994 MITCHELL.T@OCF.compuserve.com wrote:

>
> *Message:
> From: MITCHELL.T at CCPO.KCPO
> Date: 10/3/94 2:38PM
> To: INTERNET:netsig@tapr.org at OCF_INFORM
> Subject: How do you ID a Regen Rpt?
> Contents:
> This may be trivial, but....
>
> How do you identify a regen repeater? We are going to set a 9600 UHF
> regen system in service soon, and I was not sure how everyone else
> handles the requirments. What about control? Do you use a seperate
> controller?
>
> Also, we were thinking about having a NOS box attached to the TNC serial
> serial port and operate a POP Mail Server and Gateway. Any ideas? Should
> this be off site?
>
> Want your input?
>
> Curiously,
>
> Tim KA5RYF
> Kansas City
>
>
>

        Tim, just get the TNC your using the 9600 baud modem in to ID
with the nodes call at least every 15 minutes. And no problem putting
another TNC via the rs-232 port or a computer with jnos running with a
kiss attachment to the one tnc's rs-232 port IF the tnc is using the x1j
chip. That should be done anyway since you want to help your tcp/ip
buddies....hi

have fun and bet $1.00 American it will work great!

-karl k5di

17. Re: Converting the TAPR 9600 modem for 19.2kB

From: srbible@cs.nps.navy.mil (Steven R. Bible)
Date: Mon, 03 Oct 1994 15:23:43 -0700
To: netsig@tapr.org
Message-ID: <9410032226.AA29755@taurus.cs.nps.navy.mil>
Rendered body type: text/plain

>Howdy --
>
>I just finished modifying one of the TAPR 9600 modems for use in our 19.2kB,
>no-scrambler, repeater. It was pretty easy, though there are still a few
>tweaks left to do.

[stuff deleted]

John, what radios do you plan you use at 19.2Kbps?

Steve, N7HPR

srbible@cs.nps.navy.mil

Naval Postgraduate School, Monterey, CA 93943

18. Re: How do you ID a Regen Rpt?

From: tmoulton@ram.net
Date: Mon, 03 Oct 94 18:15:04 EDT
To: netsig@tapr.org
Message-ID: <05458.15021573@RAMail>
Rendered body type: text/plain

>From: netsig@tapr.org
>Date: Mon, 3 Oct 94 16:45 CDT
>Reply-To: netsig@tapr.org
>Sender: netsig@tapr.org
>To: netsig@tapr.org
>Subject: How do you ID a Regen Rpt?
>
>
>*Message:
>From: MITCHELL.T at CCPO.KCPO
>Date: 10/3/94 2:38PM
>To: INTERNET:netsig@tapr.org at OCF_INFORM
>Subject: How do you ID a Regen Rpt?
>Contents:
>This may be trivial, but....
>
>How do you identify a regen repeater? We are going to set a 9600 UHF
>regen system in service soon, and I was not sure how everyone else
>handles the requirments. What about control? Do you use a seperate
>controller?
>
>Also, we were thinking about having a NOS box attached to the TNC serial
>serial port and operate a POP Mail Server and Gateway. Any ideas? Should
>this be off site?
>
>Want your input?
>
>Curiously,
>
>Tim KA5RYF
>Kansas City
>
>

It is an interesting question.

If it is on a cooridinated channel a simple ID packet would suffice.

19. Re: How do you ID a Regen Rpt?

From: ron@chaos.eng.wayne.edu (Ron)
Date: Mon, 3 Oct 1994 19:42:42 -0400 (EDT)
To: netsig@tapr.org
Message-ID: <9410032342.AA13147@chaos.NIS.chaos>
Rendered body type: text/plain

> How do you identify a regen repeater? We are going to set a 9600 UHF
> regen system in service soon, and I was not sure how everyone else
> handles the requirments. What about control? Do you use a seperate
> controller?

The ID requirements in the USA are actually very vague and lots of loopholes.
Sure it says every 10 minutes, but did you know that nearly every repeater
link in the entire country have no ID's on them at all. This debate was
brought to the FCC in the Detroit area a while ago and their actual
conclusion was that when a user is using the link they are effectively
borrowing the radio and their callsign and when they ID it makes it legal.
Of course I'm cretainly don't want to be the one to actually challenge
them on what they said (some other lawyer might have a different explanation).
The repeater itself though usually will have a callsign on it and that
call should be ID's. There are voice repeaters out there with NO ID's
on them, and to make it legel someone must periodically say the callsign
of the repeater on a transmission. Just key down and say "W8XYZ" is
sufficient. Since this is actually a popular way of ID'ng legally (I won't
challenge this one either :-) you should theoretically be allowed to have
a user on the system, probably your station, ID with the callsign of the
person who has the repeater.

Just save some trouble though, put a NOS switch on it and transmit out a
ID every 10 mins. If you want it in CW then throw a X1J eprom in the tnc
and enable the CW id'er on it. If you don't have a tnc on the repeater and

are using something like a TAPR modem with the bit regenerator and clock
circuit, then just keep someone on the repeater sending out a periodic ID
of the callsign for the repeater until you have a better way of doing it
at the site itself.

> Also, we were thinking about having a NOS box attached to the TNC serial

The way to go alright. Put a non-user port on it also that talking on it's
own frequency to another switch. Put up a few more of these and an instant
network is in place.

--

Ron N8FOW

AMPRnet : n8fow@n8fow.ampr.org
Internet : ron@chaos.eng.wayne.edu
           aa011@detroit.freenet.org

#include <std_disclaimer.h>
/* all views and opinions expressed above are my own. */

20. Re: Mitrek 9600-baud mods

From: jra@ag9v.ampr.org
Date: Mon, 3 Oct 1994 19:07:57 -0400 (EDT)
To: netsig@tapr.org
Message-ID: <m0qrwUA-000EO1C@ag9v.ampr.org>
Rendered body type: text/plain

You (Bruce Perens) write:
>
>Hm. They wanted > $100 for a Mitrek manual when last I checked. I'll
>check again.
>
>   Bruce
>

I got a Mitrek VHF manual for ~$15 from the Motorola 800 number about two
months ago.

John

--
John Ackermann   AG9V
Internet: jra@ag9v.ampr.org
Packet: AG9V@N8ACV.#DAY.OH.USA

21. Re: Converting the TAPR 9600 modem for 19.2kB

From: jra@ag9v.ampr.org
Date: Mon, 3 Oct 1994 20:26:03 -0400 (EDT)
To: netsig@tapr.org
Message-ID: <m0qrxhj-000EO1C@ag9v.ampr.org>
Rendered body type: text/plain

You (Steven R. Bible) write:
>
>>Howdy --
>>
>>I just finished modifying one of the TAPR 9600 modems for use in our 19.2kB,
>>no-scrambler, repeater. It was pretty easy, though there are still a few
>>tweaks left to do.
>
>[stuff deleted]
>
>John, what radios do you plan you use at 19.2Kbps?

We're using the Kantronics D4-10s. Plans are in the works to convert
Motorola Mitreks, at least for repeater use (turnaround time with the reed
relay antenna switch is a little questionable). Transmitter conversion is
done; receiver is a <lot> more work and we're still doing design ideas.

John
--
John Ackermann   AG9V
Internet: jra@ag9v.ampr.org
Packet: AG9V@N8ACV.#DAY.OH.USA

22. Coordinating Digital Repeat

From: "Rick Whiting" <Rick_Whiting@ATK.COM>
Date: 4 Oct 1994 19:24:55 -0600
To: "Post Netsig TAPR" <netsig@tapr.org>
Message-ID: <9410050015.AA23498@ATK.COM>
Rendered body type: text/plain

Subject: Time:7:18 PM
  OFFICE MEMO   Coordinating Digital Repeaters   Date:10/4/94
I'm on a newly appointed Minnesota Repeater Council (MRC)
committee charged with preparing a report and recommendation
relating to coordination of digital repeaters on "traditional" FM voice
repeater channels (pairs). I believe the MRC will coordinate digital
repeaters on those frequencies if it can be shown that the digital
repeater operation will not cause interference to adjacent and co-
channel voice repeaters. (The current coordination policy specifies
geographic separation distances for adjacent and co-channel voice
repeaters based primarily on frequency band.)

To help us prepare a coordination policy for digital repeaters I would
like to hear from others with experience in this area. In particular, I
would like to identify specific cases of digital repeaters co-existing
with voice repeaters, the technical and coordination conditions
affecting their interactions, and the results.

Your inputs will be greatly appreciated and can help us increase
digital resources for operators in this region.

73/Rick W0TN <rick_whiting@atk.com>

23. Re: Coordinating Digital Repeat

From: srbible@cs.nps.navy.mil (Steven R. Bible)
Date: Tue, 04 Oct 1994 19:12:21 -0700
To: netsig@tapr.org
Message-ID: <9410050215.AA07677@taurus.cs.nps.navy.mil>
Rendered body type: text/plain

>   Subject: Time:7:18 PM
> OFFICE MEMO   Coordinating Digital Repeaters   Date:10/4/94
>I'm on a newly appointed Minnesota Repeater Council (MRC)
>committee charged with preparing a report and recommendation
>relating to coordination of digital repeaters on "traditional" FM voice
>repeater channels (pairs). I believe the MRC will coordinate digital
>repeaters on those frequencies if it can be shown that the digital
>repeater operation will not cause interference to adjacent and co-
>channel voice repeaters. (The current coordination policy specifies
>geographic separation distances for adjacent and co-channel voice
>repeaters based primarily on frequency band.)
>
>To help us prepare a coordination policy for digital repeaters I would
>like to hear from others with experience in this area. In particular, I
>would like to identify specific cases of digital repeaters co-existing
>with voice repeaters, the technical and coordination conditions
>affecting their interactions, and the results.
>
>Your inputs will be greatly appreciated and can help us increase
>digital resources for operators in this region.
>
>73/Rick W0TN <rick_whiting@atk.com>

Boy, my first impression at reading this was "Are repeater coordinating
councils so ignorant? Of course there is no interference. Packet lives
within the same bandwidths as voice." Then as I thought about it some more,
perhaps this might be part of the stumbling block of coordinating voice
frequency pairs for data. Rick, you are off to a good start and the
information you gather can hopefully be used in other areas with the same
problems.

I know that the repeater coordinating group for Northern California won't
hear of having data on a "voice" repeater frequency pair. Thus keeping data
in it's part of the frequency band plan. What ever happen to the days of 2
meter RTTY repeaters? Lest we forget.

73,

Steve, N7HPR

srbible@cs.nps.navy.mil
Naval Postgraduate School, Monterey, CA 93943

24. Re: Coordinating Digital Repeat

From: Greg Jones <gjones@tenet.edu>
Date: Tue, 4 Oct 1994 21:55:51 -0500 (CDT)
To: netsig@tapr.org
Message-ID: <199410050255.VAA08440@Kay-Abernathy.tenet.edu>
Rendered body type: text/plain

Hi Rick - you should contact the Texas VHF/FM Society. We have a bandplan
in place for digial repeaters.

In addition, digital repeaters in the voice repeater are handled the same
way -- except that they make sure they don't fudge on the repeater spacing.
The main reason for this is that since packet operates nearly
continously....a band opening can really caus problems. The VHF/FM Society
treis to get voice repeaters to operate with Toned Open-Sql. In this way
the repeater can leave there sql fairly tight and those on the firnges use
tones to get the sql to open fully for them to make it.

Greg

According to Rick Whiting:
>
>   Subject: Time:7:18 PM
>   OFFICE MEMO   Coordinating Digital Repeaters   Date:10/4/94
> I'm on a newly appointed Minnesota Repeater Council (MRC)
> committee charged with preparing a report and recommendation
> relating to coordination of digital repeaters on "traditional" FM voice
> repeater channels (pairs). I believe the MRC will coordinate digital
> repeaters on those frequencies if it can be shown that the digital
> repeater operation will not cause interference to adjacent and co-
> channel voice repeaters. (The current coordination policy specifies
> geographic separation distances for adjacent and co-channel voice
> repeaters based primarily on frequency band.)
>
> To help us prepare a coordination policy for digital repeaters I would
> like to hear from others with experience in this area. In particular, I
> would like to identify specific cases of digital repeaters co-existing
> with voice repeaters, the technical and coordination conditions
> affecting their interactions, and the results.
>
> Your inputs will be greatly appreciated and can help us increase
> digital resources for operators in this region.
>
> 73/Rick W0TN <rick_whiting@atk.com>
>
>
>
>
>

25. (no subject)

From: "Montgomery, Don" <montgd@sdcpos3b.daytonoh.NCR.COM>
Date: Tue, 04 Oct 94 11:04:00 PDT
To: 'netsig' <netsig@tapr.org>
Message-ID: <2E91E9C6@p003103gw1.daytonoh.ncr.com>
Rendered body type: text/plain

subscribe

26. Re: Coordinating Digital Repeat

From: Bdale Garbee <bdale@chunks.gag.com>
Date: Wed, 5 Oct 1994 00:28:25 -0600
To: netsig@tapr.org
Message-ID: <199410050628.AAA26639@chunks.gag.com>
Rendered body type: text/plain

In article <9410050015.AA23498@ATK.COM> you wrote:
: To help us prepare a coordination policy for digital repeaters I would
: like to hear from others with experience in this area. In particular, I
: would like to identify specific cases of digital repeaters co-existing
: with voice repeaters, the technical and coordination conditions
: affecting their interactions, and the results.

The Pikes Peak FM Association operates a 1200-baud 2m repeater on 145.205,
which is a 'controlled access pair' within the Colorado voice repeater
bandplan. It is coordinated to the extent that when the machine was first
built, the coordinating body thought it a bad idea to put it in the middle of
the voice repeaters that were active, but thought way out on the end of the
controlled access pairs would be "ok". Sigh.

Since this machine was perceived as successful, we've since built a 9600 baud
70cm repeater on 447.250, which is smack in the middle of our voice repeater
allocations. It is a fully coordinated machine. The Colorado Repeater
Association has just deployed a 9600 baud 70cm repeater elsewhere in the
state on 447.200, co-located with their voice repeater on 447.150 sharing the
same antenna system. Our machine has been perceived as a great success, the
CRA machine is too new to judge.

The real key is to try and ensure that *all* repeaters being put on the air
on coordinated frequencies, whether voice or data, are well-built and well
maintained. It isn't always obvious how to orchestrate this, but a poorly-
designed or poorly-maintained RF deck can splatter and annoy the neighbors
regardless of whether the mode is voice or data.

The fact that our digital repeaters were built and deployed by established,
respected voice repeater groups probably helped in the coordination process.
They're all Motorola RF decks, tuned and bench-qualified with the same
processes we use for our voice machines...

73 - Bdale, N3EUA
Chairman, Pikes Peak FM Association (among other things)

27. Re: How do you ID a Regen Rpt?

From: rdonnell@eskimo.com (Bob Donnell)
Date: Wed, 5 Oct 1994 00:56:52 -0700 (PDT)
To: netsig@tapr.org
Message-ID: <199410050756.AA14227@eskimo.com>
Rendered body type: text/plain

>
>
> *Message:
> From: MITCHELL.T at CCPO.KCPO
> Date: 10/3/94 2:38PM
> To: INTERNET:netsig@tapr.org at OCF_INFORM
> Subject: How do you ID a Regen Rpt?
> Contents:
> This may be trivial, but....
>
> How do you identify a regen repeater? We are going to set a 9600 UHF
> regen system in service soon, and I was not sure how everyone else
> handles the requirments. What about control? Do you use a seperate
> controller?

The 2 potential ways I can see of doing this on-site are:

1) if using a TAPR modem for the regenerator, put it on a TNC-2 (or clone)
board and set the TNC to beacon every 9.5 minutes. If you do put a nos box
on-site, set it to beacon for you.

2) construct a timer and an eprom/shift register with the proper HDLC bits
to key up, send some flags, then an ID packet.

>
> Also, we were thinking about having a NOS box attached to the TNC serial
> serial port and operate a POP Mail Server and Gateway. Any ideas? Should
> this be off site?

If the repeater is at a remote site, I woujld not reccomend putting a nos
box on-site. The only potential advantage is if the remote site will have
other links co-located. If there are no links, or the links can be done at
a users house just as well, put the nos box there, where humans can get at
it easily. We have a multi-port switch at a local cell site, and while it
can be remote sysoped for most things, great care must be excercised to
prevent getting into a condition where a site visit is required to set
things right. With a repeater, you have no hidden transmitters, so other
than txdelay considerations (very minor) a gateway or mailserver in no way
has to be at the repeater site, other than for linking purposes, as
mentioned.

>
> Want your input?
>
> Curiously,
>
> Tim KA5RYF
> Kansas City

>
>
>

Hope this helps. We have 4 9600 repeaters in the area, two of which have computers on-site. A third is linked via a very long RS-232 cable (30 miles :-) care of US West Cellular to one of the above computers. The fourth system, and the only one on two meters, is completely standalone on a ~5000 ft mountain. Good luck with your system, and if I can help, drop a note.

73, Bob

| Bob Donnell, KD7NM   bob@ethanac.kd7nm.ampr.org   rdonnell@eskimo.com |
| Western Washington Amateur IP Address Coordinator   (206) 775-3651 |
---

28. Re: Coordinating Digital Repeat

From: David Rush <rush@cacfs.ks.erg.sri.com>
Date: Wed, 05 Oct 94 08:53:14 -0500
To: netsig@tapr.org
Cc: rush
Message-ID: <9410051353.AA15930@cacfs.ks.erg.sri.com>
Rendered body type: text/plain

In message <9410050015.AA23498@ATK.COM> you write:
>   Subject: Time:7:18 PM
> OFFICE MEMO   Coordinating Digital Repeaters   Date:10/4/94
>I'm on a newly appointed Minnesota Repeater Council (MRC)
>committee charged with preparing a report and recommendation
>relating to coordination of digital repeaters on "traditional" FM voice
>repeater channels (pairs). I believe the MRC will coordinate digital
> [...]

Rick:

The idea of sharing channels between voice and voice-bandwidth digital systems sounds like a good idea. My only question is exactly what do you mean by a "digital repeater." A bit regenerator or something similar? That can closely match the voice repeater paradigm, but (as I have said before, from atop my soapbox) routers (a-la-KA9Q) make a lot more sense. They don't repeat the signals that don't need to be repeated, and don't require a freq pair (so 2 routers can use a single "repeater pair"). Throughput may be a bit less when it does re-transmit packets, but it will re-transmit fewer packets.

That assumes that everything is IP-based, as it should be :^)

David, N0OXH, rush@erg.sri.com

29. Re: Coordinating Digital Repeat

From: ESTEY@SKYLER.MAVD.HONEYWELL.COM
Date: Wed, 5 Oct 1994 10:14:51 -0500 (CDT)
To: netsig@tapr.org
Message-ID: <941005101451.20403b03@SKYLER.MAVD.HONEYWELL.COM>
Rendered body type: text/plain

One of the loud voices opposing digital on "voice" frequencies is a well-known local Amateur who complains bitterly about not being able to "band-scan" b ecause of the packet bursts!

Poor baby.

Carl

30. Re: Coordinating Digital Repeat

From: mmunster@qualcomm.com (Marvin Munster x5388)
Date: Wed, 5 Oct 1994 10:35:30 -0700
To: netsig@tapr.org
Message-ID: <199410051735.KAA15598@dopey.qualcomm.com>
Rendered body type: text/plain

Does anyone have the current band-plan for all VHF & UHF frequencies for the Southern California area. i.e., keyboard to keyboard, nodes, backbone, bbs, tcp/ip, and so on.

Thanks in advance.

Marvin Munster, WB6PKK

31. Re: Coordinating Digital Repeat

From: rdonnell@eskimo.com (Bob Donnell)
Date: Wed, 5 Oct 1994 13:31:21 -0700 (PDT)
To: netsig@tapr.org
Cc: rick_whiting@atk.com
Message-ID: <199410052031.AA27563@eskimo.com>
Rendered body type: text/plain

Hi Rick,

Here in the Seattle area our local repeater coordinators (Western Washington Amateur Relay Association) has coordinated several repeaters for digital use in the traditional 'voice' band. There is one 9600-bps machine on two meters, a 1200-baud system on 222 MHz, and 3 on 440 MHz.

To my knowledge the only problems we've had with adjacent channel interferece have been on two meters. The repeater in question is on 146.38/146.98 MHz and has a 146.36/146.96 and a 146.40/147.00 repeater within 30 (or so) miles of it. I happen to be involved in both the packet repeater, as an owner, and in the 146.96 repeater, as a member of the owning club, and builder of the repeater. The packet repeater is on a 5000' mountaintop, and has no voice repeaters coordinated within probably 200 miles, so no data on co-channel there. The repeater is running about 15 watts into an inverted j-pole (hopeing for some downtilt). The interference problems we've seeen have been tracked down to the following causes:
1) When the repeater was operated at 1200 baud by its previous owner, we found that some handheld radios being used to talk to the repeater had their PLL lockup time disimproved by the immediate application of packet audio on keyup. This caused the PLL to wander around for an extra 100 mS or so near (but not on) channel. This would kerchunk the adjacent channel repeaters. In our case, the radio primarily responsible was the Icom IC-2AT.
2) The most recent case was caused by a station that did not have his deviation set correctly, and due to extreme overdeviation, was bringing up the the 146.96 machine. 147.00 was not affected particularly because it has a slow squelch - added when the first problem appeared.

To address an area of specific concern: When a station is set up for 9600 baud or faster packet operations, it is necessary to go directly to the radio's modulator as the modulation poin. This bypasses the deviation limiter and low pass filter. It is critical to the sucessful operation of a 9600 baud system that the owners be made aware of their responsbility to adjacent channel systems that they make sure all users have a way to get their deviation set correctly (at 2.75 kHz for 9600). Any more, and they'll be un-neighborly - and as a rule the user's station won't work through the repeater worth a darn anyway!

The other systems have not had any operating problems I know of, as far as neighbors, etc.

Here is a little more grist for the mill: Since packet repeaters are not normally used by mobile stations, they do not normally need high gain, high ERP, or to be able to service users on omni antennas.

Packet (and 9600 packet especially) is much more multi-path sensitive than voice communications. In this area, a beam is manditory for using the repeaters, just to keep the multipath down. So all the users use beams, and the repeater uses a low gain (6 db or so) and low power (10 watts out of the dupes) to acheive coverage that is appropriate for the level of multipath that can be tolerated.

The advantage we plan to start excercising soon is that of re-using the data repeater pairs, at distances where one site can be heard from another. If this sounds like a cellular approach, the fact that the 440 repeaters are at cellular phone sites might be a hint :)

Because the users are using beams, we expect to be able to do this at 40-50 miles seperation on 440 MHz, initially. This means that if you can find 3-6 pairs for 9600 baud 440 repeaters, you probably will not ever have to find another - just arrange careful re-use. Since no (sane) person sits around and listens to packet, only the TNC's care, and with a good signal margin, there should be no problem with the local machine capturing the receiver.

I think one of the reasons we've had good success in our coordination and operational efforts with packet repeaters is that a number of the packet folks are, or have been, involved in voice repeater coordination in the past, and have learned the issues involved. So if you have an interested person or group, get them involved in the coordination process. It will give them a better understanding of what you are trying to accomplish, both

for them, and for the rest of the repeater community, and not leave them
flat-footed and frustrated when you bring up yet another technical issue or
question that they need to address.

Hope that helps. 73, Bob

| Bob Donnell, KD7NM   bob@ethanac.kd7nm.ampr.org   rdonnell@eskimo.com |
| Western Washington Amateur IP Address Coordinator   (206) 775-3651 |
----

32. Re: Coordinating Digital Repeat

From: rdonnell@eskimo.com (Bob Donnell)
Date: Wed, 5 Oct 1994 13:50:47 -0700 (PDT)
To: netsig@tapr.org
Message-ID: <199410052050.AA29276@eskimo.com>
Rendered body type: text/plain

> Hi Rick - you should contact the Texas VHF/FM Society. We have a bandplan
> in place for digial repeaters.
>
> In addition, digital repeaters in the voice repeater are handled the same
> way -- except that they make sure they don't fudge on the repeater spacing.
> The main reason for this is that since packet operates nearly
> continously....a band opening can really caus problems. The VHF/FM Society
> treis to get voice repeaters to operate with Toned Open-Sql. In this way
> the repeater can leave there sql fairly tight and those on the firnges use
> tones to get the sql to open fully for them to make it.
>
> Greg
>

Additionally Rick, encouraging the voice systems that are co-channeled to
generate or pass CTCSS on the output allows those with CTCSS decoders to set
their radios to ignore non-CTCSS (packet) signals. If the voice repeaters
are fitted with a demodulator and a 'true data-carrier detect' (True-DCD)
circuit that will >close< the squelch, then even a great band-opening might
be prevented from affecting the voice repeaters' users significantly.

Also, suggest (or make a condition of coordination) that the packet repeater
operators use True-DCD on the repeater, and then only valid data will bring
up the packet repeater. Regenerating the data is also a good engineering
decision, rather than just passing through audio. This applies to 1200 baud
systems. The above are 'requirements' to a repeater at 9600.

73, Bob

| Bob Donnell, KD7NM   bob@ethanac.kd7nm.ampr.org   rdonnell@eskimo.com |
| Western Washington Amateur IP Address Coordinator   (206) 775-3651 |
----

33. RE: TAPR 9600 problems.

From: crompton@nadc.nadc.navy.mil (D. Crompton)
Date: Wed, 5 Oct 94 18:19:36 -0400
To: netsig@tapr.org
Message-ID: <9410052219.AA16902@nadc.nadc.navy.mil>
Rendered body type: text/plain

I moved this discussion to here from nos-bbs where I originally
started it.

My problem was a lack of clock at the PLD U14 and a reading of that
PLD showing all fuses blown.

Well I received another PLD from Dorthy out at TAPR and all is well now.

I never got an answer to the question about the availability of at least
checksums for these (and other) tapr PLD's, Wether an equiv. circuit or
programming files could be made available or any other info that might
make troubleshooting around these parts easier.

On installing it in a PacCom micro TNC. The TAPR docs follow TNC2 for this
TNC with a side page on the Tiny TNC. The tiny stuff is good for the micro
but does not go far enough. Most of the specific TNC2 stuff describing
parts does not apply as the micro, although TNC2 compatible is not an
equiv. circuit. I was able to get all of the lights and the switching
circuit to work by comparing the true TNC2 schematic and that for the
micro. This info is NOT in the tapr manual or anywhere eles that I was
able to find. If anyone else needs this info I can put it together and
send it in.

I have no real need to switch the TNC between internal (TNC2) modem
and TAPR but just wanted it to work as advertised.

Doug

34. 9600 baud repeaters

From: crompton@nadc.nadc.navy.mil (D. Crompton)
Date: Wed, 5 Oct 94 18:22:09 -0400
To: netsig@tapr.org
Message-ID: <9410052222.AA16924@nadc.nadc.navy.mil>
Rendered body type: text/plain

I know what basic radios are being used for digital repeaters but what
RF isolation is being used - cavities etc. I assume that the same requirements
apply that are used for voice?

Do TEKK radios work well (ok) on 440 in repeater service with cavities and
a single antenna?

Doug

35. Re: Coordinating Digital Repeat

From: ron@chaos.eng.wayne.edu (Ron Atkinson)
Date: Wed, 5 Oct 1994 19:42:14 -0400 (EDT)
To: netsig@tapr.org
Message-ID: <9410052342.AA19800@chaos.NIS.chaos>
Rendered body type: text/plain

Coordinating packet repeaters is different in Michigan than what it
seems to be like in other states. The repeater council here didn't
want to do any coordination in digital modes, so a packet council
was set up for this. The 'MIchigan PAket Council' (MIPAC) was formed
and it handles all digital activities and coordination. If we need
a packet repeater then MIPAC goes to the repeater council and just
requests the frequencies. The council really doesn't care what's on
the frequency, since if it's digital it becomes the responsibility
of MIPAC.   When MIPAC was formed and became incorporated the
repeater council recognized it as the digital coordinating body.

I know of 2 packet repeater pairs in Michigan off the top of my head.
One is a 1200 baud repeater and the other is 9600. Both are just outside
of the voice repeater bandplan. We currently don't share the frequencies
with voice repeaters and there really isn't a need to around here either.
Plus there just aren't any voice pairs available. We ran out of 2m, 220
and 440 pairs years ago, so if anyone wants a repeater they have to
either get a snapper pair (limited power, range, PL, odd offset, etc...)
or go digital and move outside of the voice range. Of course the lack
of frequencies is in the SouthEast Michigan area (around Detroit). Can't
speak on the rest of the state, but MIPAC does cover all of it.

Just in case anyone from the Upper pennisula of Michigan is on here, to
prevent offending them :-)   Nope the Michigan Repeater Council doesn't
cover the U.P. I think Wisconsin handles Upper Michigan.

--

Ron N8FOW

AMPRnet : n8fow@n8fow.ampr.org
Internet : ron@chaos.eng.wayne.edu
           aa011@detroit.freenet.org

#include <std_disclaimer.h>
/* all views and opinions expressed above are my own. */

36. Re: 9600 baud repeaters

From: wlbarn@planetx.bloomu.edu (William L. Barnes)
Date: Wed, 5 Oct 1994 19:50:25 +0500
To: netsig@tapr.org
Message-ID: <9410052350.AA01526@planetx>
Rendered body type: text/plain

Re: Do TEKK radios work well (ok) on 440 in repeater service with cavities and a
single antenna?

Well, I'm not sure about repeater service, but my TEKK micro works great for
a single channel simplex operation... I have it on my UHF forwarding port,

and it works good...

Hope this helps some...
73, de Bill, N3JIX
```
*********************************************************************
* Bill Barnes, N3JIX                    * Bloomsburg Unviersity     *
* Internet:  wlbarn@planetx.bloomu.edu  * Bloomsburg, Pa            *
* Packet  :  n3jix@n3jix.#epa.pa.usa.noam                           *
*********************************************************************
```

37. Re: 9600 baud repeaters

From: Bdale Garbee <bdale@chunks.gag.com>
Date: Wed, 5 Oct 1994 18:43:26 -0600
To: netsig@tapr.org
Message-ID: <199410060043.SAA27151@chunks.gag.com>
Rendered body type: text/plain

In article <9410052222.AA16924@nadc.nadc.navy.mil> you wrote:

: I know what basic radios are being used for digital repeaters but what
: RF isolation is being used - cavities etc. I assume that the same requirements
: apply that are used for voice?

Yes. RF is RF.

: Do TEKK radios work well (ok) on 440 in repeater service with cavities and
: a single antenna?

The TEKK radios exhibit relatively poor temperature stability compared to some other "commercial" RF decks. Not everyone cares about this as much as we do, I realize, but at most repeater sites temp is an issue. I've heard a mumble or two about their behaviour in high-RF environments, but have no personal data. We have several TEKK radios running simplex as clients on our 9600 UHF repeater, but I've never considered them suitable for the environment on the Peak...

Bdale

38. Re: 9600 baud repeaters

From: wa3dsp@wa3dsp.ampr.org (Doug Crompton - Richboro, PA - [44.80.08.120])
Date: Thu, 06 Oct 94 03:57:25 GMT
To: netsig@tapr.org
Message-ID: <38389@wa3dsp.ampr.org>
Rendered body type: text/plain

My "digipeater" (hey what do we call these things anyway?) will be home located in a good environment. I just would like to gather info on radio's, cavities, antennas that others are using.

The idea is to cell these things anyway, so hilltop might be fine for voice repeaters but for digital a number of sites linked together to cover an area might be better.

Doug

39. 10GHz

From: wa3dsp@wa3dsp.ampr.org (Doug Crompton - Richboro, PA - [44.80.08.120])
Date: Thu, 06 Oct 94 04:09:14 GMT
To: netsig@tapr.org
Message-ID: <38395@wa3dsp.ampr.org>
Rendered body type: text/plain

===== Begin of included message =====

> Is anyone running data (or voice) fixed links using 10GHz?
> I picked up a couple of modules at a hamfest last Sunday along
> with a wealth of data. Need to fabricate some horns and the
> modulation schemes seem simple. Seems you could put a widwband
> FM link on that would go a few miles very easily. Temperature
> drift seems like it might be problem though - alittle AFC would
> help. Anyone have any war stories?
>
> Doug
>

===== End of included message =====

40. Wormhole

From: "James Brude" <usr4662a@TSO.UC.EDU>
Date: Thu, 6 Oct 1994 00:59:08 -0400
To: netsig@tapr.org
Message-ID: <199410060459.AAA20625@tso2.tso.uc.edu>
Rendered body type: text/plain

Hi Ron: I saw your message come thru on the TAPR.SIG. in regards to repeater
council. I have a friend in germany who says he has connected into the
Detroit area via a wormhole. Do you know of any wormholes in the Detroit
area? I have been able to get to Detroit on the 4800 baud packet trunk
here in Ohio. I live in Cincinnati area. Any comments greatly appreciated.
I've been involved with the 4800 trunking from Cincy to Columbus,Ohio in
the past and work the 9600 pac-sats. Enjoy reading the tapr.sig messages.
73 de Jim WB0SCD

41. Re: Wormhole

From: ron@chaos.eng.wayne.edu (Ron Atkinson)
Date: Thu, 6 Oct 1994 01:09:23 -0400 (EDT)
To: netsig@tapr.org
Message-ID: <9410060509.AA20643@chaos.NIS.chaos>
Rendered body type: text/plain

> Hi Ron: I saw your message come thru on the TAPR.SIG. in regards to repeater
> council. I have a friend in germany who says he has connected into the
> Detroit area via a wormhole. Do you know of any wormholes in the Detroit
> area? I have been able to get to Detroit on the 4800 baud packet trunk
> here in Ohio. I live in Cincinnati area. Any comments greatly appreciated.
> I've been involved with the 4800 trunking from Cincy to Columbus,Ohio in
> the past and work the 9600 pac-sats. Enjoy reading the tapr.sig messages.
> 73 de Jim WB0SCD

Jim, send me your email address. The replies here go to the listserv.

--

Ron N8FOW

AMPRnet : n8fow@n8fow.ampr.org
Internet : ron@chaos.eng.wayne.edu
           aa011@detroit.freenet.org

#include <std_disclaimer.h>
/* all views and opinions expressed above are my own. */

42. Re: 9600 baud repeaters

From: hank_oredson@MENTORG.COM (Hank Oredson)
Date: Thu, 6 Oct 94 10:53:09 PDT
To: netsig@tapr.org
Message-ID: <9410061053.ZM4758@hanko>
Rendered body type: text/plain

On Oct 5, 8:09pm, Bdale Garbee wrote:
> Subject: Re: 9600 baud repeaters
> In article <9410052222.AA16924@nadc.nadc.navy.mil> you wrote:
>
> : I know what basic radios are being used for digital repeaters but what
> : RF isolation is being used - cavities etc. I assume that the same
requirements
> : apply that are used for voice?
>
> Yes. RF is RF.
>
> : Do TEKK radios work well (ok) on 440 in repeater service with cavities and
> : a single antenna?
>
> The TEKK radios exhibit relatively poor temperature stability compared to
some
> other "commercial" RF decks. Not everyone cares about this as much as we do,
> I realize, but at most repeater sites temp is an issue. I've heard a mumble
> or two about their behaviour in high-RF environments, but have no personal
> data. We have several TEKK radios running simplex as clients on our 9600
> UHF repeater, but I've never considered them suitable for the environment on
> the Peak...
>
> Bdale
>-- End of excerpt from Bdale Garbee

We have a number of the TEKKs, both mini and micro, in our network.
Have not counted them recently, but the number is probably well

above a dozen now, and may be two dozen.

The majority are in the homes of hams.
Temp stability for these has not been a problem.

We've not seen problems in high RF environments, and in fact have
one micro running at a 50KW AM/150KW FM station transmitter site.
This site has a large herd of commercial radios as well, on various
freqs in the 150, 450, and 800 bands. We DID put cavities on
this one ...

We have had some problems with the TEKK minis, and had to send them
to TEKK for repair. Don't know the details, but suspect it was
problems from high RF environment. Mostly we use the micros.

Our experience is that these radios are excellent low cost choice
for short point-to-point 9600 baud links. Hang them off a kpc-9612,
put a couple kpc-9612s on a Data Engine, and you have a very interesting
six port switch.

Why are we doing this? We're "going cellular" with many low and mid
level sites, and reserving the high sites for the long (100-200) mile
hops we require to get between popluation centers.

   ... Hank

--

Hank Oredson @ Mentor Graphics   Library Operations
Internet   : hank_oredson@mentorg.com   "Parts 'R Us!"
Amateur Radio: W0RLI@W0RLI.OR.USA.NOAM

43. Tekk Mini at first glance

From: Glenn Elmore <glenne@eagle.sr.hp.com>
Date: Thu, 6 Oct 1994 11:27:30 -0800 (PDT)
To: netsig@tapr.org (TAPR netsig)
Message-ID: <9410061827.AA00558@eagle.sr.hp.com>
Rendered body type: text/plain

Here are some initial notes I made while looking at a Tekk Mini for the
first time. At the time, I had no schematic or manual. ab6ym has since
FAXed me one and I know a bit more than I did. If I get time, I hope to
measure the receiver to see what the cause of it's recovery problem is.
First glance might make one wonder about the wisdom of shutting of a
crystal oscillator and expecting it to come up rapidly.

  The Mini and Micro appear to be different primarily in the receiver
chip they use (There are some physical differences but I'm just
comparing schematics) I wouldn't expect a great deal of strong signal or
sensitivity and distortion differences between the two based on what the
schematics show.

  Executive summary is that except for receiver recovery time, they seem
to perform as advertized. It appears to me that one needs to be quite
careful to be sure that they are netted (and don't drift) and that
modulation levels are kept low to avoid the edges of the the filters,
particularly the 21.4 MHz 1st IF filter. Spurious and strong signal performance
(I didn't properly measure desense due to noise floor of the particular sig
gen I was using) seem to put them in the same class as much other amateur
equipment. I did not measure TOI.

My first notes follow.

Glenn n6gn

---------------------------Initial Tekk Mini Notes-------------------------------
Receiver

  DCD fully asserts in about 30 milliseconds after RF comes true
  RSSI saturates around -65 dBm, floor is below -110 dBm
  overall 3 dB bw about 15 KHz, limited by 21.4 filter
     21.4 filter is flat, ~1 dB p-p ripple
       but with 50 us group delay unflatness
       15 KHz between horns, fairly uniform "bowl"
     455 KHz filter is 25+ KHz wide

```
       4 dB p-p ripple (maybe my connection messing it up)
       also around 50 us GD ripple but not a bowl, 20 KHz between horns

 1st  LO=45.781X9+21.4=433.43 MHz
 2nd  LO=20.945 -21.4= 455 KHz

 Image of 21.4 IF at 390.63 is down 70 dB
 Image of 455 IF at 432.52 is down 70 dB

 Desense floor was lower than the (poor) sig gen I was using (broadband noise
   and I didn't have a 433.43 notch handy)



Transmitter
---------
  +33 dBm (2W) at 9.6V @ 600 mA
  Full RF power in around 1 millisecond after asserting PTT
  Second harmonic ~-60 dBC
  several sets of spurs +- .5-25 MHz down around -70 dBC
  no obvious broadband noise or humps.

  130 mv P-P of TxAudio "fills" +- 5KHz passband with 4 dB peaks at
edges (TAPR scrambling as waveform).  This gives +-7.5 KHz down about
-20 dBC and receiver is recovering 180 mv P-P which compares to 320 mv
p-p on noise.  This seems to be a reasonable place to run it once
everything is netted considering the above filter responses.  Increasing
the TxA causes noticable non-linearity in revoverd audio as well as some
distortion in the transmit spectrum.  I'm not sure which is contributing
the most, tx or rx, but running higher deviation seems a bad idea.

As expected, running TxDelay much lower than 40 ms starts to cause
problems.  AX25 loopback connection on bench maintained at 30 but not 20
ms.  Didn't measure but I'd anticipate that weak signal performance is
comprimised even at 30.  As noted before, the Tekk DCD performance could
use some speedup.  Don't know whether it is a problem with revovering
from saturation, power supply switching or and without a schematic I'm
not anxious to figure it out at the moment.  Still, this is an area for
considerable improvement.

  40 ms at 9600 bps is 48 bytes overhead due to keyup/sense delay.  40
ms at 9600 bps is 48 bytes overhead due to keyup/sense delay.
```

44. Re: tapr.org as "unknown host"?

```
From: crompton@nadc.nadc.navy.mil (D. Crompton)
Date: Thu, 6 Oct 94 15:12:51 -0400
To: netsig@tapr.org, tcp-group@ucsd.edu
Message-ID: <9410061912.AA21526@nadc.nadc.navy.mil>
Rendered body type: text/plain

TAPR.ORG is an MX record. If you are using NOS on AMPRNET you must set
'smtp usemx on' This assumes you are using an internet (or internet
served) domain server.

In general you should set have this set to on BUT it will take longer
since each resolve must be done at least twice. Once to see if an MX record
exists and again to find an 'A' record. Since this is only done for
mail, and that is not realtime, who really cares.

If you are using wa3dsp or a JNOS version that has 'domain resolve'
(I think K2MF does also) you can check these things BEFORE you try
to send mail.

domain resolve ucsd.edu where.I.want.to.go [mx]

This would check the ucsd,edu domain server for the type of record
requested. If non is added, like mx, then it looks for 'A' records
If you check for 'A' reocrds and get a host unknown then check for
an MX. Also use the closest server to you in place of ucsd.edu if you
can.

Doug
```

45. Tekk Radio mods.

```
From: aljkbe@attme.cnet.att.com (J. K. Bednar)
Date: 7 Oct 94 12:57:16 GMT
To: netsig@tapr.org
Message-ID: <2e9549130.42a1@alem1.attme.cnet.att.com>
```

Rendered body type: text/plain

Attached you will find modifications for both model Tekk radio's that improve
the receive and transmit performance at 9600bps. It's reported that both TEKK
and PacComm have been making some/all of these modifications. I have no idea
when they implemented these changes. Receiver IF tuning is important with
both model receiver. If anyone can suggest a source for 1st IF crystal filters
for these radio's please post it. Piezo Technologies makes filters however,
they quoted me a price of $60.

John, WB3ESS aljkbe@attme.att.com

Tekk Data Radio Mods for 9600 bps
by John Bednar, WB3ESS
Original Issue:12/93
Last update: 5/16/94

TEKK KS-900L Receiver Mods
At the 9-pin interface connector add a 2.7k ohm resistor in
series with the wire going to pin 5. Next, solder a 0.001uf
capacitor between pin 2 and pin 5 of the same connector.

TEKK KS-900L Transmitter Mods
Solder a 3.3uf tantalum capacitor (observe the polarity) in
parallel with capacitor C31. The transmit requirements are not
changed so re-adjusting the transmit level will not be required.

TEKK KS-960L Receiver Mods
Remove chip capacitor C18 and replace it with a 0.001uf leaded
capacitor or chip capacitor.

TEKK KS-960L Transmitter Mods
Bypass the transmit limiter, modify the modulator, and inject the
audio into TP9 with the following steps:
1) Remove the wire attached to pin 4 of the 9-pin connector and
solder it to ground.
2) Solder the (+) lead of a 10uf tantalum capacitor with 0.2"
leads to the 9-pin connector - pin 4.
3) Prepare a 1.8" piece of wire with 0.2" ends and solder one end
of the wire to the (-) lead of the capacitor added in step 2.
Tuck the other end of the wire around the circuit board in the
corner. Don't use the corner where the BNC is mounted.
4) Locate the junction of C43, C92, and R41. Form the wire, trim
the end to 0.1" and solder it carefully to this junction.
5) Locate the junction of R43 and C47. Carefully remove the
solder from that solder pad. With a sharp knife cut the trace
diagonally between R43 and C47. Check your cut with an ohm
meter to insure that the trace is open. If you break R43, C47,
C48 or C49 don't worry because these parts are no longer used.
6) Locate potentiometer VR1 and turn it fully CW.
7) Re-adjust the transmit frequency and the transmit deviation.

A complete article with frequency response graphs will appear in
the January 94 Northeast Digital Association Quarterly. As of 10/94
this issue has not been printed.

46. Repeater antenna choice

From: wa3dsp@wa3dsp.ampr.org (Doug Crompton - Richboro, PA - [44.80.08.120])
Date: Sat, 08 Oct 94 03:05:58 GMT
To: netsig@tapr.org
Message-ID: <38492@wa3dsp.ampr.org>
Rendered body type: text/plain

Curious what antennas a hot now days for 2m and/or 440 use in
omni-directional repeater or simplex work. The diamonds look good.
Also comet and newtronics has a similiar one. I had something like
the Diamond 2m/440 dual antenna - there are 3 base models - guess
something like good,better,best... I was thinking of better - think
it has about a 10'length - top of the line is almost 18' in length.

I've used a lot of ringos in the past but these are toys compared to

this new breed - also much less expensive.

Doug

47. RE: Repeater Antennas

From: "Frank Alwine" <falwine@VNET.IBM.COM>
Date: Sat, 8 Oct 94 08:48:08 EDT
To: netsig@tapr.org
Message-ID: <m0qtimL-0000dHC@dptspd.sat.datapoint.com>
Rendered body type: text/plain

We've recently installed a Diamond 2M omni at the local user port site for the backbone we are building. I don't remember the model number, but it's roughly 10' high and has an advertised 6db(d?) gain; overall construction was very good. It went up without a hitch and has been performing well so far with the node in test/debug mode. I think it will be a good performer, but of course it still needs to make it through a Vermont winter before I give it high marks! I've never used a Comet, but they appear to be similar. Top of the line would be a Phelps-Dodge StationMaster... we have one on our 146.85 repeater here that is 15 years old and still going strong...on the other hand, the rumored price for a new StationMaster is $500+ and our Diamond only cost around $110 from AES.....

73 de Frank N1GPY n1gpy@n1gpy.#nwvt.vt.usa falwine@vnet.ibm.com

       * "I'm always right, my modem has error correction." *

48. Re: Repeater antenna choice

From: Dino Moriello <dino@cam.org>
Date: Sat, 8 Oct 1994 10:40:28 -0400 (EDT)
To: netsig@tapr.org
Message-ID: <9410081440.AA25176@Ocean.CAM.ORG>
Rendered body type: text/plain

This is what 'Doug Crompton - Richboro, PA - [44.80.08.120]' wrote:
>
> Curious what antennas a hot now days for 2m and/or 440 use in
> omni-directional repeater or simplex work. The diamonds look good.
> Also comet and newtronics has a similiar one. I had something like
> the Diamond 2m/440 dual antenna - there are 3 base models - guess
> something like good,better,best... I was thinking of better - think
> it has about a 10'length - top of the line is almost 18' in length.
>
> I've used a lot of ringos in the past but these are toys compared to
> this new breed - also much less expensive.
>
> Doug
>
 I've put up many repeater antennas and I own a diamond x500hd at home and I don't trust these fiber antennas for repeater antennas unless they're mounted at home, but not on mountain tops.

If you can get a folded dipole-type with internal wiring, I have found them to be very rugged. I've installed them in areas where temperature can fall to -40 and winds can go over 70mph. The provide a DC ground and no external wiring is exposed to the elements. They can be built fairly easily and the only trick is to make to impedance transformer cable, but this too can be done with RG213. I made only for 220 one evening with copper piping (a little heavy) but it works.

My diamond is on a 60 ft tower and I've had it for 2 years. In high winds it whips around quite a bit (it's 17 feet long) and my friend's broke during the first freezing rain storm. I know another group that had one installed on the top of an apartment complex and it gave in too. I feel these antennas are fine for home use, but for repeater use where you need reliablity and ruggedness, best find something commercial, at least this way you would have to worry about it in heavy winds.

That's my two cents, dino

--
  [Dino Moriello : dino@cam.org or moriello@rouyn-ogc.hydro.qc.ca   ]
  [VE2DM@VE2FKB : WWW Home Page: http://www.cam.org/~dino/   ]
  ["Too boldly go where no one has gone before" - Star Trek   ]

49. RE: Repeater Antennas

From: "Gary McDuffie, Sr." <mcduffie@hannibal.wncc.cc.ne.us>
Date: Sat, 8 Oct 1994 17:46:47 -0600 (MDT)
To: netsig@tapr.org
Message-ID: <Pine.3.89.9410081724.A27680-0100000@hannibal>
Rendered body type: text/plain

On Sat, 8 Oct 1994, Frank Alwine wrote:

> Top of the line would be a Phelps-Dodge StationMaster... we have one on our
> 146.85 repeater here that is 15 years old and still going strong...on the
> other hand, the rumored price for a new StationMaster is $500+ and our

That's only $33 per year. Not much for that kind of reliability!
BTW, that beats the heck out of a DB-224. They like to crack at the
bottom of the elements.

Gary

50. Re: Repeater Antennas

From: Jack Taylor <n7oo@huachuca-emh8.army.mil>
Date: Sat, 8 Oct 94 17:14:26 MST
To: netsig@tapr.org
Message-ID: <m0qtm48-0000tgC@dptspd.sat.datapoint.com>
Rendered body type: text/plain

Digi/node/repeater antennas are a big budget item when purchased new.
Especially for mountain top locations where environmental survivability
is a factor. The old Phelps-Dodge (now Celwave) Station Master antennas
came in two flavors, the Station Master (cheapest) and the Super Station
Master (most expensive). We bought several Station Masters for our
Army Mars mountain top repeater system and experienced failure on all
of them due to wind and ice loading after a few years. The Super Station
Master is designed to withstand rough environments, but the cost is
considerably more. We ended up going over to the four-dipole Celwave
phased antenna which I recall as being less costly than the 'regular'
Station Master. These have been up about six years and out of the four,
only one has recently suffered damage.

Since the Station Master style antennas do experience damage from time-to-
time and undergo deteriation of the fiber glass skin, they can be occasionally
had for the asking from 2-way radio shops. Our club was donated a
"Motorola" Station Master which had a badly weathered sheath. When swept,
this antenna was found to be flat at 151 MHz. Most, but not all of this
series has a broad bandwidth. Our particular antenna gave a SWR at
145.00 MHz of about 1.7:1. The sheath was given several coats of white
latex paint and is now serving as the BISBEE node antenna side-mounted
on a tower atop a nearby 7100 ft peak. Much of the stress on this style
of antenna is due to flexing in the wind. A simple support made out of
schedule 40 PVC pipe fixtures, and fastened to the tower, takes most of
the wind stress off the antenna. We found an unexpected side benefit
was that since the antenna was cut for a higher frequency, we get an
estimated 3 degree downtilt pattern.

In case of a broken/damaged Station Master, these can be taken apart and
repaired if the original frequency is close enough for ham use. The
antenna elements are copper pipe of the appropriate length and the phasing
is accomplished with #12 copper wire. Problems with broken soldered
connections are easy to fix. However, sometimes the matching stub at the
base cracks due to flexing. This is either welded or hard soldered and
takes skill with a gas torch to repair. In any event, it's a good idea
to add a support brace to the antenna.

Another approach that shows promise is to build a gain J-pole. This was
publicized on the ham bbs ckt a few years back by a group in the mid-west.
The length of this design is somewhat less than that of an equivelant gain
Station Master and lends itself well to side-mounting on a tower. In its
simplest form it can be nothing more than antenna elements and two coils
made from #12 wire. This can easily be supported from two insulated
(or non-insulated as long as the top of the antenna itself is insulated)
arms on the side of a tower. More sophisticated versions can be enclosed
inside of schedule 40 PVC pipe and bottom mounted as long as a support
stay is added. The modeled antenna pattern for this design is excellent
with most of the energy concentrated at low angles. There are a couple
of high angle lobes, which could lend themselves well for 'upside down'
mounting at mtn top locations.

73 de Jack

51. Re: Repeater antenna choice

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Sat, 8 Oct 1994 18:57:19 -0600 (MDT)
To: netsig@tapr.org
Message-ID: <Pine.SUN.3.90.941008185351.7689B-100000@kazak>
Rendered body type: text/plain

On Fri, 7 Oct 1994 wa3dsp@wa3dsp.ampr.org wrote:

> Curious what antennas a hot now days for 2m and/or 440 use in
> omni-directional repeater or simplex work. The diamonds look good.
> Also comet and newtronics has a similiar one. I had something like
> the Diamond 2m/440 dual antenna - there are 3 base models - guess
> something like good,better,best... I was thinking of better - think
> it has about a 10'length - top of the line is almost 18' in length.
>
> I've used a lot of ringos in the past but these are toys compared to
> this new breed - also much less expensive.
>
> Doug
>

Hi Doug I put up a Comet dual band about 5' long that cost me $95 that is working Great on my x1j antenna now. I put it up last weekend and it has made a wild improvement over the old 4 bay diplole that was bad really. So got for it!

73, karl

52. Re: Repeater antenna choice.

From: wb9mjn@wb9mjn.ampr.org
Date: Sun, 17 Feb 80 19:41:54 UTC
To: netsig@tapr.org
Message-ID: <8552@wb9mjn.ampr.org>
Rendered body type: text/plain

Hi. The first antenna we had at the CAPRA digipeater on the IBT building in downtown Chicago was an antenna that a two way shop gave one of our guys for free. It was similar to what Jack reports. Resonated at 151, had terrible downtilt. Terrible, since even at 450 feet, it had a hard time covering the Chicago area, with the downtilt. We obtained another identical antenna, and rebuilt it to two meters. And electrically it was great, but it only lasted a year or so before the abrasive wind in downtown Chicago turned the fiber glass cover in a big furry mess, hi. The agragate roofing materials grind against each other, and the small rock powder that is formed blows off the buildings, in high winds. We replaced that antenna with a DB 224 4 bay, and it has lasted till now. The system has been off the air for a year or so, for other reasons, but the antenna is fine, and has worked well for more than 5 years.

4 Bay antennas are not always the answer. For building top locations they are probably best, but on the side of a tower, i would recommend something like a station master style. The tower takes the main lightning current, a and the fiberglass cover will minimise iceing difficulties. Its a good idea to miminimise any slapping around with a PVC strut at the top of the antenna.

4 Bays have much better BW, and match, however. Thier patterns are reconfigurable, easily. As mentioned above they are better in high lightning situations. If u are out of the Iceing zone, like we in Chicago are, the 4 Bays are a good choice. 4 Bays do not exhibit the downtilt problem. If the pattern is on the horizon at design center, it will be on the horizon across the frequency response, and beyond. The corporate feed network will show egual phase shift at whatever frequency, between radiators. The phase shift will vary, but since the signal goes thru the same length cable to get to an element, the elements remain in phase, and the pattern on the horizon. I m not sure about this for downtilt 4 bay antennas. It might depend on if the downtilt is achieved in the harness, or bay spacing.

73, Don. wb9mjn%wb9mjn.ampr.org@wb9uus.bradley.edu

73, Don.

Mailbox : WB9MJN @ N9HSI.IL.USA.NA
AMPRNet : wb9mjn@wb9mjn.ampr.org[44.72.41.131]
Internet: wb9mjn%wb9mjn.ampr.org@wb9uus.bradley.edu

53. Re: Repeater antenna choice

From: Ken Koster <koster@mdd.comm.mot.com>
Date: Sun, 09 Oct 1994 11:07:39 -0700
To: netsig@tapr.org

Message-ID: <9410091807.AA11864@fh34c.mdd.comm.mot.com>
Rendered body type: text/plain

>Curious what antennas a hot now days for 2m and/or 440 use in
>omni-directional repeater or simplex work. The diamonds look good.
>Also comet and newtronics has a similiar one. I had something like
>the Diamond 2m/440 dual antenna - there are 3 base models - guess

  In my opinion the Diamond X-50 is the best of the Diamonds for
packet work. It's inexpensive, well built, easy to mount, and has
more than enough gain on each band to be useful. The other Diamond
models may have more gain but on packet thats often a disadvantage.

  I have one that's been in use for over three years, it still works
great and shows no sign of weathering.

  Our local IP network has had four of them mounted from local
cellular radio towers for almost two years now and they continue
to perform well.

Ken, N7IPB

54. Want to subscribe

From: janne@netcontrol.fi (Janne Hattula)
Date: Mon, 10 Oct 1994 09:46:16 +0200
To: dsp@tapr.org, netsig@tapr.org, tapr-bb@tapr.org
Message-ID: <199410100746.JAA06949@netcontrol.netcontrol.fi>
Rendered body type: text/plain

Hi!

I want to join in to these mailing lists.

janne@netcontrol.fi

55. Re: Repeater antenna choice

From: dme@ingersoll.com (Dave Ewaldz N9HKM)
Date: Mon, 10 Oct 94 09:24:41 CDT
To: netsig@tapr.org
Message-ID: <9410101624.AA13892@ingersoll.com>
Rendered body type: text/plain

On the Diamond antennas, I have had mixed luck. At one site, I have one of
the X-500 18' monsters. It has survived two nasty midwest winters with
minor problems. It is only 50' high on a tower though. I did have a problem
with the elements inside the radome vibrating loose. What I did to help this
was take the thing apart and solder the connection points normally held by
the screws. That thing sure moves in the wind! Others in the area have
experienced the same thing with the longer length Diamod models.
The other one I have is a shorter X-50 that is on a taller tower and has
been surviving like a champ. For a tall tower/building/mountain site, don't
skimp
and just buy a commercial grade antenna IMHO.
--
 Dave Ewaldz INGERSOLL MILLING MACHINE CO.
 N9HKM   Rockford, Illinois, USA

 Internet   - dme@ingersoll.com
 Amprnet   - n9hkm%n9hkm.ampr.org@ke9yq.ampr.org
 Ma-Bell   - (815)-987-6081
 Packet ax25 mail - n9hkm@n9hkm.#ncil.il.usa.noam

56. Re: Repeater antenna choice

From: David Rush <rush@cacfs.ks.erg.sri.com>
Date: Mon, 10 Oct 94 10:26:06 -0500
To: netsig@tapr.org
Message-ID: <9410101526.AA01264@cacfs.ks.erg.sri.com>
Rendered body type: text/plain

>Curious what antennas a hot now days for 2m and/or 440 use in
>omni-directional repeater or simplex work. The diamonds look good.
>Also comet and newtronics has a similiar one. I had something like

A friend runs a 70cm repeater and a 2m TCP/IP router/POP server on
an 18 ft Comet. Has about (as he recollects) 9-10 dB gain on 70cm,
and about 6-7 on 2m... costs about $170.

He's happy with both of his - one at the not-too-remote repeater site
and one at home.

David

57. Mail Distribtion

From: Greg Jones <gjones@tenet.edu>
Date: Mon, 10 Oct 1994 14:55:14 -0500 (CDT)
To: netsig@tapr.org (NETSIG mailing), bbssig@tapr.org (BBSIG mailing)
Message-ID: <199410101955.OAA17435@Kay-Abernathy.tenet.edu>
Rendered body type: text/plain

For those that are redistributing the netsig and bbssig groups, please look over this.

X-Sender: nobody@nisc.ieee.org
X-Gateway: nisc.ieee.org (1:107/10)
X-Gateway-Postmaster: postmaster@nisc.ieee.org
X-Comment: Please do NOT send UUencoded Files thru this gateway
X-Comment: without prior permission of the Gateway-Postmaster

The question is - please look over your files and see if you are generating this.

As list error handler (me) I am getting a message from this system everytime a message is sent.

No one on any of the lists are at this address, so it is being regenerated someplace else.

Thanks - Greg

58. re: repeater Antenna

From: wa3dsp@wa3dsp.ampr.org (Doug Crompton - Richboro, PA - [44.80.08.120])
Date: Tue, 11 Oct 94 01:30:59 GMT
To: netsig@tapr.org
Message-ID: <38769@wa3dsp.ampr.org>
Rendered body type: text/plain

Thanks for all the feedback on the antennas. I think I may go
with the diamond (or comet) intermediate size - like the
Diamond X300A - too bad it does not have an 'N' connector. You
apparently have to go to the 17 footer to get that.

Anther question - they do not mention the band filters in the ads.
Are they good? That is has anyone had any problems with simultaneous
2 meter / 440 RF in the 20-30 watt level?

The two meter third harmonic is very close to the 440 freq. But then
I guess close is pratically right on since the BW is (should be) fairly
narrow. Also the FM deviatio on the 3rd harmonic is tripled.

Doug

59. Filters/duplexers

From: mmunster@qualcomm.com (Marvin Munster x5388)
Date: Tue, 11 Oct 1994 09:44:26 -0700
To: netsig@tapr.org
Message-ID: <199410111644.JAA02365@dopey.qualcomm.com>
Rendered body type: text/plain

Well the thing on antennas was very informative. Thanks to everyone who contributed.

Now lets try this:

Wacom vs. Telwave (or others)

5" vs 8" vs cost.

"Band for the buck"

Comments or opinions will be appreciated on this. We are about to purchase a set of cavities for a local 2m machine.

I realize that this is not directly related to packet, but in some cases, band pass filters, notch filters and other types of filters could be used for packet sites. I just thought that there are a lot of savy folk that are attached to this forum and they could share some experience with us.

Thanks.

Marvin, WB6PKK

60. Re: Filters/duplexers

From: Jack Taylor <n7oo@huachuca-emh8.army.mil>
Date: Wed, 12 Oct 94 9:29:13 MST
To: netsig@tapr.org
Message-ID: <m0qv70n-000148C@dptspd.sat.datapoint.com>
Rendered body type: text/plain

I've been told that the WACOM duplexers do not use Invar rods with which
to set cavity resonance with. I have a WACOM on the SVALAN node and indeed,
when I check for power output from time-to-time, it requires retuning.
The SVALAN node is in a non-temperature controlled shed subject to temp
swings of 50 degrees or better. The WACOM I have appears to use the
Sinclair Q circuit configuration and as such has very good rejection between
RX and TX, approximately 75 - 80 dB per section. If your site is temperature
controlled and you get a good buy on a WACOM, then it probably will work
out satisfactorily.

I have no experience with the Teledyne, other than picking up what appeared
to be 220 MHz cavities at a recent swapmeet. Turned out these guys are in
the 300 MHz range and my only option is to cut them down for 440.

I had some DB Products VHF cavities which were giving "tuning problems".
Since I needed a 220 duplexer for a proposed 9k6 backbone upgrade, I
decided to cut these "bad" units down for 220. As it turned out, the
conversion ended up quite well. I modified them for the Sinclair Q circuit
and the rejection notches are as deep as the WACOM.

Then, as sometimes happens, someone brought over an old Sinclair duplexer
which had the coax fittings mounted on a plate attached to the side of
the cans. It appeared to be some sort of hybrid ring configuration up in
the high VHF region. I converted this over to the Q circuit at 146 Mhz
and after a lot of fiddling with coupling loop placement, it shows good
bandpass - bandreject responses.

Based on this experience, I would rate the quality of construction between
the different brands of cavities as follows:

   #1 Sinclair
   #2 Teledyne (Haven't yet disassembled it, but appears to be well made)
   #3 DB Products (Cheaply constructed but works good)
   #4 WACOM (Tuning versus temperature problems)

In theory one would think a 2M duplexer cavity would work at the third
harmonic on 440. Both N7CL and I have swept cavities resonant at 2M to
see what the 440 response would be. I don't know what brand of cavity
Eric used but we both got similar results. The 440 resonance point was
not a linear function of the 2M frequency. It came out low. In my case
it was necessary to tune the cavity to around 150 MHz to get a good bandpass
curve in the 440 range. I didn't experiment further, but it does appear
2M cavities could be used as notch filters, bandpass filters, or a combination
of both at 440.

73 de Jack

61. 9600 modem firmware

From: crompton@nadc.nadc.navy.mil (D. Crompton)
Date: Wed, 12 Oct 94 15:57:59 -0400
To: netsig@tapr.org
Message-ID: <9410121957.AA22621@nadc.nadc.navy.mil>
Rendered body type: text/plain

I asked this question before and sent it to (I thought) the TAPR
9600 expert. I have gotten no official (or unofficial) TAPR response.

1. Is the firmware (PLD code) for the TAPR 9600 modem available? U13,U14,U1

2. Are the PLD's as shipped software security protected?

3. If the answer to 1 is yes and 2 is no then can the programming code
   be made available on a BBS?

I had problems with a PLD and had TAPR ship me another one that now
appears to be working but I hate having (depending on) chips that
cannot be replaced unless I can get them from TAPR. What if somewhere

down the line they don't have any or worse won't have any. I am left
with a board that cannot be used until I can replace it. Many of these
boards are being used in important places, like repeater service.

Can anyone with authority in TAPR give me some insight on this. I have
access to a DataIO programmer.

This of course would apply to other current and future TAPR programmable
devices.

Doug

62. Yaesu 708

From: crompton@nadc.nadc.navy.mil (D. Crompton)
Date: Wed, 12 Oct 94 16:00:04 -0400
To: netsig@tapr.org
Message-ID: <9410122000.AA22732@nadc.nadc.navy.mil>
Rendered body type: text/plain

Has anyone used a Yaesu 708 (440 handheld) in 9600 baud packet
applications?

Doug

63. Re: Filters/duplexers

From: Murphree Michael A <mamurphree@space.honeywell.com>
Date: Wed, 12 Oct 94 17:06:00 PDT
To: netsig <netsig@tapr.org>
Message-ID: <2E9C79DB@smtpdos.space.honeywell.com>
Rendered body type: text/plain

While the list is on this topic, does anyone have a good tuning procedure
for duplexers that they care to post, in particular for the Phelps-Dodge UHF
units?

I've got one that is tempermental, probably a result of bad contact fingers,

but would be interested in hearing any experiences with these...

Tks,
Mike N4CNW mamurphree@space.honeywell.com

64. TheNET X1J for AEA PK-80??

From: ESTEY@SKYLER.MAVD.HONEYWELL.COM
Date: Thu, 13 Oct 1994 10:02:05 -0500 (CDT)
To: netsig@tapr.org
Cc: ESTEY@SKYLER.MAVD.HONEYWELL.COM
Message-ID: <941013100205.2040576e@SKYLER.MAVD.HONEYWELL.COM>
Rendered body type: text/plain

Has anyone here been successful at installing X1J firmware in a AEA PK-80???????????   If so can you
point to a source of documentation? (Magazine articles
or ASCI files at an FTP site?

73
Carl

65. Re: TheNET X1J for AEA PK-80??

From: tmoulton@ram.net
Date: Thu, 13 Oct 94 11:17:42 EDT
To: netsig@tapr.org
Message-ID: <05526.15021573@RAMail>
Rendered body type: text/plain

>From: netsig@tapr.org
>Date: Thu, 13 Oct 94 10:10 CDT
>Reply-To: netsig@tapr.org
>Sender: netsig@tapr.org
>To: netsig@tapr.org
>Subject: TheNET X1J for AEA PK-80??
>
>Has anyone here been successful at installing X1J firmware in a AEA PK-80???
>?????????   If so can you point to a source of documentation? (Magazine arti
>cles
>or ASCI files at an FTP site?
>
>73
>Carl

I know ROSE runs on it. Make sure you have a 32K RAM.

tom, w2vy

66. This list

From: crompton@nadc.nadc.navy.mil (D. Crompton)
Date: Thu, 13 Oct 94 11:33:09 -0400
To: netsig@tapr.org
Message-ID: <9410131533.AA16529@nadc.nadc.navy.mil>
Rendered body type: text/plain

I am getting occasional 'time exceeded' message from dptspd.sat.datapoint.com
130.137.64.2 when this list is being delivered to my AMPR system. The message
shows this address 'time exceeded' to my encap gateway. Also I get unreachables
at times to this address and the output of this list is very choppy. Sometimes
messages come right back and other take a day to get here. Is this system
having troubles???

Doug

67. Re: 9600 modem firmware

From: Greg Jones <gjones@tenet.edu>
Date: Thu, 13 Oct 1994 14:42:32 -0500 (CDT)
To: netsig@tapr.org
Message-ID: <199410131942.OAA24862@Kay-Abernathy.tenet.edu>
Rendered body type: text/plain

According to D. Crompton:
>
>
> I asked this question before and sent it to (I thought) the TAPR
> 9600 expert. I have gotten no official (or unofficial) TAPR response.

Mel was sent this message. He does travel a lot. Those are the breaks in a
totally volunteer organization.   When did you send it - a week or so ago ?

>
> 1. Is the firmware (PLD code) for the TAPR 9600 modem available? U13,U14,U1

No.

> 2. Are the PLD's as shipped software security protected?

Yes. At least suppose to.

> 3. If the answer to 1 is yes and 2 is no then can the programming code
>   be made available on a BBS?

See above.

> I had problems with a PLD and had TAPR ship me another one that now
> appears to be working but I hate having (depending on) chips that
> cannot be replaced unless I can get them from TAPR. What if somewhere
> down the line they don't have any or worse won't have any. I am left
> with a board that cannot be used until I can replace it. Many of these
> boards are being used in important places, like repeater service.

If this does happen then we will publish the PLD images.

We use a 18CV8 which is a very common PLD device and don't expect this to
ever be a problem with availabilty. When a kit is dicontinued that uses a
PLD we will publish the necessary information. To date, we have not had
such a project happen.

> Can anyone with authority in TAPR give me some insight on this. I have
> access to a DataIO programmer.
>
> This of course would apply to other current and future TAPR programmable
> devices.

Yep.

I could go into a long discussion on the issues behind releasing images, but
I have another midterm today :-)

Greg

68. RE: 9600 firmware

From: crompton@nadc.nadc.navy.mil (D. Crompton)
Date: Thu, 13 Oct 94 17:06:08 -0400
To: netsig@tapr.org
Message-ID: <9410132106.AA05144@nadc.nadc.navy.mil>
Rendered body type: text/plain

Greg,

Thank you for the response. Yes I would like an explanation of why these devices are secured and why the code is not made available when you get a chance. I must say that I disagree with this based on my understanding of TAPR's goals. For one thing it certainly makes troubleshooting very hard if not immposible. I assume that TAPR does not want us to troubleshoot these things but rather bother the volunteer help??

It would not be an issue if there were not so many failures with these devices. I have run into many TAPR 9600 users who have had trouble with these PLD's. I suspect that it is a programming problem and not an after programming failure although that is hard to determine.

At the VERY LEAST checksums should be supplied for the PLD's - at least users who had access to programming hardware could check them.

Doug

69. [NETSIG:89] RE: 9600 firmware

From: dkelly@nebula.tbe.com (david kelly)
Date: Thu, 13 Oct 94 17:37:11 -0500
To: netsig@tapr.org
Message-ID: <9410132237.AA23395@nebula.tbe.com>
Rendered body type: text/plain

> Greg,
>
> Thank you for the response. Yes I would like an explanation of why
> these devices are secured and why the code is not made available
> when you get a chance. I must say that I disagree with this based on
> my understanding of TAPR's goals. For one thing it certainly makes
> troubleshooting very hard if not immposible. I assume that TAPR does
> not want us to troubleshoot these things but rather bother the volunteer
> help??
>
> It would not be an issue if there were not so many failures with these
> devices. I have run into many TAPR 9600 users who have had trouble with
> these PLD's. I suspect that it is a programming problem and not an
> after programming failure although that is hard to determine.
>
> At the VERY LEAST checksums should be supplied for the PLD's - at least
> users who had access to programming hardware could check them.
>
> Doug

Furthermore, we know what the part is, we know where the inputs and outputs are, we know what combinational elements are available inside the part. In this case protecting the source code only hurts the honest man, as anyone who wants to steal the design can push test vectors thru a known good part and derive the PLD equations based on the part's response.

Seems to me the better PLD programmers generate a test vector pattern in order to functionally test the part after programming. No doubt one of them out there automates the reverse engineering task also.

David N4HHE

70. Re: [NETSIG:90] RE: 9600 firmware

From: bruce@pixar.com (Bruce Perens)
Date: Thu, 13 Oct 94 21:25 PDT
To: netsig@tapr.org, netsig@tapr.org
Message-ID: <m0qveDO-00063lC@mongo.pixar.com>
Rendered body type: text/plain

It's unfortunate that the PAL equations for the TAPR 9600 modem are not published. That makes it impossible for the TAPR modem to serve as a "reference implementation" for others who would build a different, but compatible, modem.

Of course any company that wants to can license the modem design from

TAPR. That's not going to happen. Anyone who wants to build such a
design today would base it on an embedded processor with on-chip
peripherals, rather than all of that small-scale integration.

Don't respond until your midterm's over. I approve of your priorities.

        Bruce Perens AB6YM

71. re: Yaesu 708

From: iw1cxz@iw1cxz.ampr.org (Andrea Borgnino)
Date: Sat, 15 Oct 94 18:49:05 GMT
To: netsig@tapr.org
Message-ID: <460@iw1cxz.ampr.org>
Rendered body type: text/plain

Hello Ham's,here is the modification for use the FT 708 R with a
G3RHU modem for 9600 bd packet operation.

     Audio output from FT 708 R receiver's Discriminator for 9600bauds
     ----
                 by Andrea Borgnino IW1CXZ

Here is a very simple way of taking audio direct from the discriminator.
Connect a flying lead to pin 9 Q 107 (MC3357P) that is located at the
opposite side of the CPU.
You can also take the signal from the GREEN cable that goes to the
TONE SQUELCH optional unit.

    TxAudio input into FT 708 R Varactor diode for 9600 bauds
    ----

You must find the D 209 Varactor diode (FC 53) locate near the output
DC connection,or near the VR 202 trimmer in the PLL Unit.Then you
must insert the TXA signal in the catode of D 209 and the 9600
modification is made.

My FT 708 can run 9600 operation very well with a TX DELAY value of 17.

Best 73 from IW1CXZ Andrea @I1LYM.#TO.ITA.EURO
Email iw1cxz@radio-gw.cisi.unito.it

72. How to contact tapr DSP supplier

From: Serge Burjak <serge@systech.mhs.oz.au>
Date: Fri, 14 Oct 1994 14:05:05 +0000
To: netsig@tapr.org
Message-ID: <Pine.3.89.9410141432.B709-0100000@systech.mhs.oz.au>
Rendered body type: text/plain

The title says it well.

Where can I contact the supplier of the DSP TAPR modems?

I am not in the US.

Thanks in advance.

Serge VK4BSB

73. Re: [NETSIG:93] How to contact tapr DSP supplier

From: Jim Neely <jneely@tenet.edu>
Date: Sat, 15 Oct 1994 19:47:52 -0500 (CDT)
To: netsig@tapr.org
Message-ID: <199410160047.TAA00998@Kay-Abernathy.tenet.edu>
Rendered body type: text/plain

According to Serge Burjak:
>
> The title says it well.
>
> Where can I contact the supplier of the DSP TAPR modems?
>
> I am not in the US.
>
> Thanks in advance.
>

> Serge VK4BSB
>
>

The TAPR mailing address is: TAPR, 8987-309 E. Tanque Verde Rd, #337,
TUCSON AZ 85749-9399.

73...jn

74. Re: TheNET X1J for AEA PK-80??

From: roberts@ses6a.bt.co.uk
Date: Mon, 17 Oct 1994 10:12:25 +0100
To: netsig@tapr.org
Message-ID: <m0qwoGe-0000ONC@dptspd.sat.datapoint.com>
Rendered body type: text/plain

From: NAME: Dave Roberts
        FUNC: DTI14
        TEL: 0473 224566   <ROBERTS AT A1 AT SES6A>
To: "netsig@tapr.org" @ R11F @ MRGATE

As far as I can remember, the PK80 is a TNC2 clone type TNC.

If so, TheNet X-1J will run just fine in it.

Dave
G8KBB

75. Re: [NETSIG:95] Re: TheNET X1J for AEA PK-80??

From: tmoulton@ram.net
Date: Mon, 17 Oct 94 07:46:37 EDT
To: netsig@tapr.org
Message-ID: <05540.15021573@RAMail>
Rendered body type: text/plain

>From: netsig@tapr.org
>Date: Mon, 17 Oct 94 04:27 CDT
>Reply-To: netsig@tapr.org
>Sender: netsig@tapr.org
>To: netsig@tapr.org
>Subject: [NETSIG:95] Re: TheNET X1J for AEA PK-80??
>
>From: NAME: Dave Roberts
>   FUNC: DTI14
>   TEL: 0473 224566   <ROBERTS AT A1 AT SES6A>
>To: "netsig@tapr.org" @ R11F @ MRGATE
>
>As far as I can remember, the PK80 is a TNC2 clone type TNC.
>
>If so, TheNet X-1J will run just fine in it.
>
>Dave
>G8KBB

yes, but the original ones only had 16K ram

tom, w2vy

76. Re: [NETSIG:96] Re: TheNET X1J for AEA PK-80??

From: wa3dsp@wa3dsp.ampr.org (Doug Crompton - Richboro, PA - [44.80.08.120])
Date: Tue, 18 Oct 94 00:29:36 GMT
To: netsig@tapr.org
Message-ID: <39307@wa3dsp.ampr.org>
Rendered body type: text/plain

For the PK80 (which is a TNC2 exact clone) you will need to replace
the two 8K ram chips with a single 32K unit if this is not already
done. Also the Upgrade kit to 10Mhz is also highly recommended. It is
available from Paccom. The mods can exactly follow those for the TNC2
as this is a part for part copy of the original TNC2 - unlike the
Paccom tiny or micro which is electrically and part numbered quite
different.

The X1J does work fine in the micro though as I have it running.

Doug

77. RE: [NETSIG:97] Re: TheNET X1J for AEA PK-80??

From: ESTEY@SKYLER.MAVD.HONEYWELL.COM
Date: Tue, 18 Oct 1994 9:07:07 -0500 (CDT)
To: netsig@tapr.org
Message-ID: <941018090707.20403d26@SKYLER.MAVD.HONEYWELL.COM>
Rendered body type: text/plain

Doug, WA3DSP, mentioned that the PK-80 will need to have two 8K RAM chips
replaced with a single 32K RAM. Does anyone know what the P/N is and where
it can be obtained? Also, he said the upgrade kit to 10 Mhz is highly
recommended. Whose upgrade kit? What is it called and where can I get it?
73
Carl

78. Re: [NETSIG:98] Re: TheNET X1J for AEA PK-80??

From: tmoulton@ram.net
Date: Tue, 18 Oct 94 10:20:05 EDT
To: netsig@tapr.org
Message-ID: <05557.15021573@RAMail>
Rendered body type: text/plain

>From: netsig@tapr.org
>Date: Tue, 18 Oct 94 09:10 CDT
>Reply-To: netsig@tapr.org
>Sender: netsig@tapr.org
>To: netsig@tapr.org
>Subject: [NETSIG:98] Re: TheNET X1J for AEA PK-80??
>
>Doug, WA3DSP, mentioned that the PK-80 will need to have two 8K RAM chips
>replaced with a single 32K RAM. Does anyone know what the P/N is and where
>it can be obtained? Also, he said the upgrade kit to 10 Mhz is highly
>recommended. Whose upgrade kit? What is it called and where can I get it?
>73
>Carl

You can get both of these from PacComm in Tampa, Fl

800-486-7388 or 800-223-3511 or 813-874-2980 and ask for Linda

tom

79. Re: [NETSIG:99] Re: TheNET X1J for AEA PK-80??

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Tue, 18 Oct 1994 08:35:55 -0600 (MDT)
To: netsig@tapr.org
Message-ID: <Pine.SUN.3.90.941018082838.18874B-100000@kazak>
Rendered body type: text/plain

On Tue, 18 Oct 1994 tmoulton@ram.net wrote:

> >From: netsig@tapr.org
> >Date: Tue, 18 Oct 94 09:10 CDT
> >Reply-To: netsig@tapr.org
> >Sender: netsig@tapr.org
> >To: netsig@tapr.org
> >Subject: [NETSIG:98] Re: TheNET X1J for AEA PK-80??
> >
> >Doug, WA3DSP, mentioned that the PK-80 will need to have two 8K RAM chips
> >replaced with a single 32K RAM. Does anyone know what the P/N is and where
> >it can be obtained? Also, he said the upgrade kit to 10 Mhz is highly
> >recommended. Whose upgrade kit? What is it called and where can I get it?
> >73
> >Carl
>
> You can get both of these from PacComm in Tampa, Fl
>
> 800-486-7388 or 800-223-3511 or 813-874-2980 and ask for Linda
>
> tom
>

        Thanks Tom, I was about to get out my phone book and look up
PacComm again. It seems that only a few of us know that the tiny-2 IS the
tnc to use at 1200 and 9600 baud. Why buy another when it comes with
c-mos chips running 10 mhz and configured to accept a g3ruh modem inside
that already small case. Yesterday I tried to put a TAPR modem inside the
tiny-2 case. No joy. It will fit IF you leave both the front and back
ends off.

        I have 2 of them running with TEKK radios and at the main
mountain site it is co-located with the best vhf repeater in the area and

both run off 2 solar panels and a diehard car battery. We made it through
last winter with no power problems. But then we skipped winter last year...

-karl k5di

80. Re: [NETSIG:100] Re: TheNET X1J for AEA PK-80??

From: crompton@nadc.nadc.navy.mil (D. Crompton)
Date: Tue, 18 Oct 94 14:23:41 -0400
To: netsig@tapr.org
Message-ID: <9410181823.AA12114@nadc.nadc.navy.mil>
Rendered body type: text/plain

I managed to get the TAPR modem in the Micro2 and put the covers on. It
is a squeeze but it fits.

Doug

81. Re: [NETSIG:101] Re: TheNET X1J for AEA PK-80??

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Tue, 18 Oct 1994 13:42:02 -0600 (MDT)
To: netsig@tapr.org
Message-ID: <Pine.SUN.3.90.941018134051.25963C-100000@kazak>
Rendered body type: text/plain

On Tue, 18 Oct 1994, D. Crompton wrote:

> I managed to get the TAPR modem in the Micro2 and put the covers on. It
> is a squeeze but it fits.
>
> Doug
>
>

Thanks Doug. Will try again but with new TAPR kit constructed to
do just that. Love my tiny-2's!

82. Re: It doesn't fit???

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Tue, 18 Oct 1994 13:40:09 -0600 (MDT)
To: ka7oei@uugate.wa7slg.ampr.org
Cc: Sig Networking <netsig@tapr.org>
Message-ID: <Pine.SUN.3.90.941018133639.25963B-100000@kazak>
Rendered body type: text/plain

On Tue, 18 Oct 1994 ka7oei@uugate.wa7slg.ampr.org wrote:

> The TAPR modem doesn't fit in a Tiny-2 case?
>
> Hmmm...   It depends on how hard you try...
>
> I was able to cram the TAPR modem into a Tiny-2 case just fine... Well,
> it *did* take a little bit of work since I had to not only use shorter
> jumper shorting plugs (actually, I bent them over at a 45 degree angle...)
> and trim the wires on the modem disconnect slightly, but the length of
> the board was no problem... with both covers on... Except for th
> xxx the extre wire hanging out the back (from the modem) this Tiny-2 looks
> exactly like any other...
>
> <Clint>
>

Clint the one I have has red indicator lites on one end and a
data to radio plug on the back end. Guess if you unsolder the lites and
take the plug off it will fit. I need to make one that way...I want to
make a bit regenarated repeater node soon.

Thanks, de karl k5di

83. Re: [NETSIG:103] Re: It doesn't fit???

From: crompton@nadc.nadc.navy.mil (D. Crompton)
Date: Tue, 18 Oct 94 16:02:20 -0400
To: netsig@tapr.org
Message-ID: <9410182002.AA17781@nadc.nadc.navy.mil>
Rendered body type: text/plain

For putting the TAPR modem in the micro - I did the following - knowing
what jumpers I needed I cut them short and soldered jumpers across
where needed. I also insulated under the board where the Micro's interface
connector hits it. I permanantly wired in the TX,RX and PTT on the
DIN plug after disconnecting the Micro's modem. I also was able to use

the Micro's LEDS - but this is not straighforward as the Micro IS NOT
electrically TNC2 compatible.

In the final wrap it looks like a micro entirely from the outside but
is really a TAPR modem on a micro.

Doug

84. Old TAPR TNC 2

From: kb8uul@detroit.ampr.org
Date: Wed, 19 Oct 94 01:59:08 edt
To: netsig@tapr.org
Message-ID: <3496@detroit.ampr.org>
Rendered body type: text/plain

I was wondering:

Does anybody happen to know if the original TAPR TNC 2 (Rev 2, circa 1985) is
upgradable to any of the current networking schemes by firmware upgrade?

And... Is the firmware public-domain that can be FTP'd or downloaded from some
place?

Thanks in advance,

Noel (kb8uul)

85. Re: [NETSIG:105] Old TAPR TNC 2

From: tmoulton@ram.net
Date: Wed, 19 Oct 94 06:58:07 EDT
To: netsig@tapr.org
Message-ID: <05560.15021573@RAMail>
Rendered body type: text/plain

>From: netsig@tapr.org
>Date: Wed, 19 Oct 94 00:59 CDT
>Reply-To: netsig@tapr.org
>Sender: netsig@tapr.org
>To: netsig@tapr.org
>Subject: [NETSIG:105] Old TAPR TNC 2
>
>
>I was wondering:
>
>Does anybody happen to know if the original TAPR TNC 2 (Rev 2, circa 1985) i
>s
>upgradable to any of the current networking schemes by firmware upgrade?

Yes! Most of the current TNC's are "TNC-2 Clones", so there are EPROMs for
ROSE (X.25), KISS/NOS (TCP/IP) and TheNet/X1J (homebrew)

>
>And... Is the firmware public-domain that can be FTP'd or downloaded from so
>me
>place?

It all can be gotten from FTP or via uuencoded mail

>
>Thanks in advance,
>
>Noel (kb8uul)

tom, w2vy

86. X1J Manager

From: mmunster@qualcomm.com (Marvin Munster x5388)
Date: Wed, 19 Oct 1994 12:30:04 -0700
To: netsig@tapr.org
Message-ID: <199410191929.MAA13047@dopey.qualcomm.com>
Rendered body type: text/plain

Does anyone know about this program. I do not have access to CompuServe,
and was wondering if anyone has used this program and where can I find it
(other than CompuServe)?

  Here's the summary from CompuServe:

[72305,426]   Lib: 9
X1JM10.ZIP/Bin Bytes: 289201, Count: 13, 07-Sep-94

  Title   : x1j Manager 1.0, Sampler Release
  Keywords: X1JMGR X1J RATS THENET NETROM WINDOWS PACKET NODE

  x1j Manager is a windows based application which makes the job of
  examining and altering the parms and modes of a x1j node much easier. The
  raw information from the node is displayed in easy to understand dialogs.
  It then can be altered and the new settings uploaded back to the node.
  The program requires windows to run.

Marvin - WB6PKK
mmunster@qualcomm.com

87. Coordinating Digital Repeat

From: "Rick Whiting" <Rick_Whiting@ATK.COM>
Date: 19 Oct 1994 15:45:44 -0600
To: "Post Netsig TAPR" <netsig@tapr.org>
Message-ID: <9410192035.AA01569@ATK.COM>
Rendered body type: text/plain

Subject: Time:3:24 PM
  OFFICE MEMO   Coordinating Digital Repeaters   Date:10/19/94

Comments On
COORDINATION OF FULL DUPLEX DIGITAL FACILITIES

Below are the replies to my question regarding coordinating full duplex
digital facilities on traditional voice repeater channels. I thought it
would be useful to collect the info in one text for future reference. I'm
sure it's not the last time the question will be asked! Thanks to everyone
who contributed their wisdom on this subject.

73/Rick W0TN

Boy, my first impression at reading this was "Are repeater coordinating
councils so ignorant? Of course there is no interference. Packet lives
within the same bandwidths as voice." Then as I thought about it some more,
perhaps this might be part of the stumbling block of coordinating voice
frequency pairs for data. Rick, you are off to a good start and the
information you gather can hopefully be used in other areas with the same
problems.

I know that the repeater coordinating group for Northern California won't
hear of having data on a "voice" repeater frequency pair. Thus keeping data
in it's part of the frequency band plan. What ever happen to the days of 2
meter RTTY repeaters? Lest we forget.

73,

Steve, N7HPR

srbible@cs.nps.navy.mil
Naval Postgraduate School, Monterey, CA 9394

Hi Rick - you should contact the Texas VHF/FM Society. We have a bandplan in
place for digial repeaters.

In addition, digital repeaters in the voice repeater are handled the same
way -- except that they make sure they don't fudge on the repeater spacing.
The main reason for this is that since packet operates nearly
continously....a band opening can really cause problems. The VHF/FM Society
tries to get voice repeaters to operate with Toned Open-Sql. In this way the
repeater can leave there sql fairly tight and those on the firnges use tones
to get the sql to open fully for them to make it.

Greg Jones

The Pikes Peak FM Association operates a 1200-baud 2m repeater on 145.205,
which is a 'controlled access pair' within the Colorado voice repeater
bandplan. It is coordinated to the extent that when the machine was first
built, the coordinating body thought it a bad idea to put it in the middle of
the voice repeaters that were active, but thought way out on the end of the
controlled access pairs would be "ok". Sigh.

Since this machine was perceived as successful, we've since built a 9600 baud 70cm repeater on 447.250, which is smack in the middle of our voice repeater allocations. It is a fully coordinated machine. The Colorado Repeater Association has just deployed a 9600 baud 70cm repeater elsewhere in the state on 447.200, co-located with their voice repeater on 447.150 sharing the same antenna system. Our machine has been perceived as a great success, the CRA machine is too new to judge.

The real key is to try and ensure that *all* repeaters being put on the air on coordinated frequencies, whether voice or data, are well-built and well maintained. It isn't always obvious how to orchestrate this, but a poorly-designed or poorly-maintained RF deck can splatter and annoy the neighbors regardless of whether the mode is voice or data.

The fact that our digital repeaters were built and deployed by established, respected voice repeater groups probably helped in the coordination process. They're all Motorola RF decks, tuned and bench-qualified with the same processes we use for our voice machines...

73 - Bdale, N3EUA
Chairman, Pikes Peak FM Association (among other things

Rick:

The idea of sharing channels between voice and voice-bandwidth digital systems sounds like a good idea. My only question is exactly what do you mean by a "digital repeater." A bit regenerator or something similar? That can closely match the voice repeater paradigm, but (as I have said before, from atop my soapbox) routers (a-la-KA9Q) make a lot more sense. They don't repeat the signals that don't need to be repeated, and don't require a freq pair (so 2 routers can use a single "repeater pair"). Throughput may be a bit less when it does re-transmit packets, but it will re-transmit fewer packets.

That assumes that everything is IP-based, as it should be :^)

David, N0OXH, rush@erg.sri.com

One of the loud voices opposing digital on "voice" frequencies is a well-known local Amateur who complains bitterly about not being able to "band-scan" because of the packet bursts!

[Some info deleted]

Carl (WA0CQG)

Hi Rick,

Here in the Seattle area our local repeater coordinators (Western Washington Amateur Relay Association) has coordinated several repeaters for digital use in the traditional 'voice' band. There is one 9600-bps machine on two meters, a 1200-baud system on 222 MHz, and 3 on 440 MHz.

To my knowledge the only problems we've had with adjacent channel interferece have been on two meters. The repeater in question is on 146.38/146.98 MHz and has a 146.36/146.96 and a 146.40/147.00 repeater within 30 (or so) miles of it. I happen to be involved in both the packet repeater, as an owner, and in the 146.96 repeater, as a member of the owning club, and builder of the repeater. The packet repeater is on a 5000' mountaintop, and has no voice repeaters coordinated within probably 200 miles, so no data on co-channel there. The repeater is running about 15 watts into an inverted j-pole (hopeing for some downtilt). The interference problems we've seeen have been tracked down to the following causes:

1) When the repeater was operated at 1200 baud by its previous owner, we found that some handheld radios being used to talk to the repeater had their PLL lockup time disimproved by the immediate application of packet audio on keyup. This caused the PLL to wander around for an extra 100 mS or so near (but not on) channel. This would kerchunk the adjacent channel repeaters. In our case, the radio primarily responsible was the Icom IC-2AT.

2) The most recent case was caused by a station that did not have his deviation set correctly, and due to extreme overdeviation, was bringing up the the 146.96 machine. 147.00 was not affected particularly because it has a slow squelch - added when the first problem appeared.

To address an area of specific concern: When a station is set up for 9600 baud or faster packet operations, it is necessary to go directly to the radio's modulator as the modulation poin. This bypasses the deviation limiter and low pass filter. It is critical to the sucessful operation of a 9600 baud system that the owners be made aware of their responsbility to adjacent channel systems that they make sure all users have a way to get their deviation set correctly (at 2.75 kHz for 9600). Any more, and they'll be un-neighborly - and as a rule the user's station won't work through the repeater worth a darn anyway!

The other systems have not had any operating problems I know of, as far as neighbors, etc.

Here is a little more grist for the mill: Since packet repeaters are not normally used by mobile stations, they do not normally need high gain, high ERP, or to be able to service users on omni antennas.

Packet (and 9600 packet especially) is much more multi-path sensitive than voice communications. In this area, a beam is manditory for using the repeaters, just to keep the multipath down. So all the users use beams, and the repeater uses a low gain (6 db or so) and low power (10 watts out of the dupes) to acheive coverage that is appropriate for the level of multipath that can be tolerated.

The advantage we plan to start excercising soon is that of re-using the data repeater pairs, at distances where one site can be heard from another. If this sounds like a cellular approach, the fact that the 440 repeaters are at cellular phone sites might be a hint :)

Because the users are using beams, we expect to be able to do this at 40-50 miles seperation on 440 MHz, initially. This means that if you can find 3-6 pairs for 9600 baud 440 repeaters, you probably will not ever have to find another - just arrange careful re-use. Since no (sane) person sits around and listens to packet, only the TNC's care, and with a good signal margin, there should be no problem with the local machine capturing the receiver.

I think one of the reasons we've had good success in our coordination and operational efforts with packet repeaters is that a number of the packet folks are, or have been, involved in voice repeater coordination in the past, and have learned the issues involved. So if you have an interested person or group, get them involved in the coordination process. It will give them a better understanding of what you are trying to accomplish, both for them, and for the rest of the repeater community, and not leave them flat-footed and frustrated when you bring up yet another technical issue or question that they need to address.

Hope that helps. 73, Bob

Bob Donnell, KD7NM   bob@ethanac.kd7nm.ampr.org
rdonnell@eskimo.com
Western Washington Amateur IP Address Coordinator   (206) 775-3651

> Hi Rick - you should contact the Texas VHF/FM Society. We have a bandplan in place for digial repeaters.
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this way the repeater can leave there sql fairly tight and those on the
>firnges use tones to get the sql to open fully for them to make it.
>
> Greg
>

Additionally Rick, encouraging the voice systems that are co-channeled to generate or pass CTCSS on the output allows those with CTCSS decoders to set their radios to ignore non-CTCSS (packet) signals. If the voice repeaters are fitted with a demodulator and a 'true data-carrier detect' (True-DCD) circuit that will >close< the squelch, then even a great band-opening might be prevented from affecting the voice repeaters' users significantly.

Also, suggest (or make a condition of coordination) that the packet repeater operators use True-DCD on the repeater, and then only valid data will bring up the packet repeater. Regenerating the data is also a good engineering

decision, rather than just passing through audio. This applies to 1200 baud
systems. The above are 'requirements' to a repeater at 9600.

73, Bob

Bob Donnell, KD7NM   bob@ethanac.kd7nm.ampr.org
rdonnell@eskimo.com
Western Washington Amateur IP Address Coordinator   (206) 775-3651

Coordinating packet repeaters is different in Michigan than what it
seems to be like in other states. The repeater council here didn't
want to do any coordination in digital modes, so a packet council
was set up for this. The 'MIchigan PAket Council' (MIPAC) was formed
and it handles all digital activities and coordination. If we need
a packet repeater then MIPAC goes to the repeater council and just
requests the frequencies. The council really doesn't care what's on
the frequency, since if it's digital it becomes the responsibility
of MIPAC.   When MIPAC was formed and became incorporated the
repeater council recognized it as the digital coordinating body.

I know of 2 packet repeater pairs in Michigan off the top of my head.
One is a 1200 baud repeater and the other is 9600. Both are just outside
of the voice repeater bandplan. We currently don't share the frequencies
with voice repeaters and there really isn't a need to around here either.
Plus there just aren't any voice pairs available. We ran out of 2m, 220
and 440 pairs years ago, so if anyone wants a repeater they have to
either get a snapper pair (limited power, range, PL, odd offset, etc...)
or go digital and move outside of the voice range. Of course the lack
of frequencies is in the SouthEast Michigan area (around Detroit). Can't
speak on the rest of the state, but MIPAC does cover all of it.

Just in case anyone from the Upper pennisula of Michigan is on here, to
prevent offending them :-)   Nope the Michigan Repeater Council doesn't
cover the U.P. I think Wisconsin handles Upper Michigan.

--

Ron N8FOW

AMPRnet : n8fow@n8fow.ampr.org
Internet : ron@chaos.eng.wayne.edu
           aa011@detroit.freenet.or
---

88. Re: [NETSIG:105] Old TAPR TNC 2

From: tmoulton@ram.net
Date: Thu, 20 Oct 94 11:55:59 EDT
To: netsig@tapr.org
Message-ID: <05580.15021573@RAMail>
Rendered body type: text/plain

Noel, kb8uul

You can ftp ROSE and PRMBS (bbs) and other support tools from lantz.com

If you need more details please email me directly (or anyone else interested)

73, Tom
w2vy@ram.net

89. Help with X1J/2 parms

From: mmunster@qualcomm.com (Marvin Munster x5388)
Date: Thu, 20 Oct 1994 18:00:08 -0700
To: netsig@tapr.org
Message-ID: <199410210100.SAA18940@dopey.qualcomm.com>
Rendered body type: text/plain

The following is a list of node parameters the I am currently experimenting
with for our local node here in Escondido (San Diego, CA). I know I am
leaving myself wide open for all kinds of comments in both directions,
however I have to respect the great tallent pool that is present on this
reflector. I would like any and all comments and opinions regarding the
settings listed below, good and bad. What are your settings and particular
situation for your nodes?

At this time, this is a single 2 meter node with no other prots (yet).
There are a couple of neighboring nodes that I will lock in at a later date
when the parms are firmed up. By the way, I am interested in the quality

settings of your neighboring nodes.

To view this table, you should set your screen or printer font to 10 point courier. This will prevent wrap-around in the table. I hope you can read this thing. Columns in a text file are terrible, but I did my best. :<

Column A represents the letters in the menue of the combining program.
Column B is the description
Column C is what this description is called in the program
Column D is the parameter number in version 2.06 of TheNET
Column E is the parameter number in version 2.08 of TheNet
Column F is the software default
Column G is what the settings I have currently set in the E-Prom

A	B	C	D	E	F	G
		TheNET Version--->	2.06 Parm	2.08 Parm	X1J2 Parm	X1J2 Parm
		Nr.=TheNET Parm Number--->	Nr.	Nr.	Dflt	ESCN
A	Level 1 parameters					
AA	PERSISTANCE (n/256)	Persistance	16	26	64	64
AB	Slot Time (10's of ms)	SlotTime	17	27	10	20
AC	Full Duplex	FullDuplexFlag				0
AD	Send Flags if no data (full duplex)	FullDuplexSendFlags				0
AE	Transmit keyup delay (10's of ms)	TxKeyupDelay				20
AF	CWID repeat period (Sec)	CwidPeriod				0
AG	CWID keyer speed (dot spd 10's ms)	CwidSpeed				6
AH	RS232 host mode (normal/DCD mode)	HostMode				1
AI	RS232 corsslink protocol	CrosslinkProtocol				0
B	Level 2 parameters					
BA	Node callsign NodeCallsign					WB6PKK-8
BB	FRACK (T1) time (seconds)	L2T1Timer	18	7	6	8
BC	AX.25 window size (packets)	L2WindowSize	19	8	7	2
BD	AX.25 retries	L2RetryCounter	20	9	10	8
BE	Ack (T2) time (10's of ms)	L2T2Timer	21	28	100	110
BF	Active check (T3) time (10's ms)	L2T3Timer	22	29	0	18000
BG	Digipeat	L2DigipeatFlag	23	10	0	0
BH	Callsign Validation	CallValidateFlag	24	11	1	1
BI	MHeard list length (0=disabled)	MHeardTableSize				20
BJ	Digipeat up/downlink control	L2DigiUpAndDownlinkCtrl				0
C	Level 3 parameters					
CA	Node alias	NodeAlias				ESCN
CB	Size of destination node table	NodeListSize =	1	17	100	150
CC	Minimum auto update quality	NodeAutoUpdate	2	1	86	150
CD	HDLC (radio port) default quality	HDLCPortQuality	3	2	192	150
CE	RS232 (crosslink) default quality	RS232PortQuality	4	3	255	255
CF	Initial obsolescence count	InitalObsoles.	5	4	6	6
CG	Minimum obsolesc. count for b'cast	MinimumObsoles.	6	5	5	5
CH	Nodes broadcast interval (seconds)	B'castInterval	7	6	1800	3600
CI	Initial 'time to live' (hops)	NetwkTimeToLive	8	18	32	32
CJ	Selective nodes broadcast on ports	SelectivePortB'cast				1
CK	Xlink port node b'cast interv. (s)	CrosslinkB'castTime				0
CL	Node broadcast algorithm port cntl	NodeBroadcastAlgorithm				0
CM	Hash node broadcast port control	HashNodeB'castControl				0
CN	Control of Slime Trails					
D	Level 4 parameters					
DA	Transport FRACK timeout (seconds)	TransptFrackTimer	9			180
DB	Transport retry counter	TransprtRetryCounter	10	20	3	3
DC	Transport acknowledge delay (sec.)	TransprtAckTimer	11	21	3	10
DD	Transport busy delay (seconds)	TransprtBusyTimer	12	19	180	180
DE	Transport window size	TransptWindowCount	13	23	4	4
DF	Transport overfill limit (frames)	TransprtOverfillLimit	14	24	4	4
E	Level 7 parameters					
EA	No activity timeout (seconds)	NoActivityTimer	15	25	900	900
EB	Beacon mode control	BeaconMode				1
EC	Beacon period (seconds)	BeaconTimer				600
ED	Beacon digipeat callsign					
EE	CQ enable flag	CQEnableFlag	26	31	1	1
EF	Information message	InformationMessage				Esc*
EG	Password	Password				-----
EH	Connect redir. (BBS,HOST,DXClstr)	ConnectRedirector=1				BBS
EI*	User message control flags					
EIA	Issue a msg when trying BBS etc	TryingToConnectMsgFlag				1

```
EIB Show all available cmds to sysop    SysopSeesAllCommandFlag                1
EIC Say 'goodbye' nicely                GoodbyeMessageFlag                     1
EID Give connect text on uplink to alia ConnectWelcomeMsagFlag                 1
EIE Show nodes in routes as alias:calsn ShowNodesAsAliasClsgn                  1
EIF Pass 8 bit data in TALK command     Pass8BitDataInTalkComd                 0
EIG Make node alias handling case sens  MakeAliasesCaseSens                    0
EIH Enable/Disable TexNet intrfc hndlr
EJ  Auto reconnect to node              AutoReconnectToNode                    1

F       IP Router Parameters
FA  This node's IP (Ampernet) address   NodeIpAddress                   0.0.0.0
FB  The IP (Ampernet) b'cast address    IpBroadcastAddress             0.0.0.0
FC  The default Time To Live (TTL)      IpTimeToLive                        20
FD  AX.25 ports mode control (DG/VC)    IpPortModeFlags                      0
FE  Enable or Disable the IP router     IpEnableFlag                         0
FF* Set MTU parameters menu
FFA MTU for AX.25 Lvl 2 IP on Radio pt  IpMtuPort0                         256
FFB MTU for AX.25 Lvl 2 IP on RS232 pt  IpMtuPort1                         256
FFC MTU for Net/Rom IP on L3 port       IpMtuNetromPort                    236
FFD Max data bytes in a L2 packet       IpMtuMaxL2InfoBytes                257
FFE Total bytes in a L2 packet          IpMtuMaxTotalL2DataByt             328

G       Miscellaneous Parameters
GA  Host command lead-in char (Escape)  HostEscapeCharacter
           27

H       Meter Control Parameters
HA  Meter Control Flags Menu
HAA Enable Deviation meter              DevMeterEnableFlag                     1
HAB Enable Signal strength meter        SMeterEnableFlag                       0
HAC Show Signals as 'S1..S9+'.          SMeterAsSPointsFlag                    0
HAD Enable Voltmeter channel 1          VoltmeterCh.1Flag                      1
HAE Enable Voltmeter channel 2          VoltmeterCh.2Flag                      1
HAF Divisor is 1000 not 100, channel 1  VoltmeterCh.2Divisor                   0
HAG Divisor is 1000 not 100, channel 2  VoltmeterCh.1Divisor                   0
HAH Resolution setting fine, channel 1  VoltmeterCh.2Resolution                0
HAI Resolution setting fine, channel 2  VoltmeterCh.1Resolution                0
HB  Deviation Meter Scale Factor        DeviationMeterScale                    0
HC  S Meter Noise Floor ADC reading     SmeterNoiseFloor                       0
HD  S Meter Scale Factor                SmeterScaleMultiplier                  0
HE  dBm Meter Scale Factor              SmeterDbMultiplier                     0
HF  dBm Noise Floor                     SmeterDbNoiseFloor                     0
HG  Voltmeter Channel 1 Scale Factor    Voltmeter1Multiplier                   0
HH  Voltmeter Channel 2 Scale Factor    Voltmeter2Multiplier                   0
HI  Voltmeter Channel 1 Offset Value    Voltmeter1Offest                       0
HJ  Voltmeter Channel 2 Offset Value    Voltmeter2Offset                       0

 *Information Message
    Escondido Amateur Radio Society (EARS) Elev. 1,600', Mt. Whitney, San
Marcos, CA


BTEXT
CTEXT
Help  (Fill in later)
```

You may respond to this reflector or directly to me at the address below.

Thank you in advance for all the fine help I know is forthcomming.

Marvin Munster, WB6PKK
mmunster@qualcomm.com

90. Re: [NETSIG:110] Help with X1J/2 parms

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Thu, 20 Oct 1994 19:37:23 -0600 (MDT)
To: netsig@tapr.org
Message-ID: <Pine.SUN.3.90.941020192649.17488A-100000@kazak>
Rendered body type: text/plain

I couldn't bring myself to comment on all that this message has within it. But as the sysop of 2 X1J nodes, 99% of what you are worried about is best set at rest. Just use the defaults you got from the ham who wrote the software. It happens that he knows what he is doing.

By all means make the cw id time 0 so you don't id that way. The fcc has saved us from that. But all that other stuff is not even interesting.

Now if your trying to set up Subnets and set things so the whole area can use the tcp part of X1J and forget the netrom stuff, I'm interested and have a little to offer. We are trying to subnet the entire state of NM. It sounds simple until you try and do it like a almost EE student wants. We are using the last 2 octets for 3 things. And must use netmask and like that to make things work.

But if,as it seems your just trying to make an x2j node work, stay away from lightning and use the defaults. It will work GREAT! That is what started this subnet feaver....hi

73 de karl k5di

91. Re: [NETSIG:111] Re: Help with X1J/2 parms

From: mmunster@qualcomm.com (Marvin Munster x5388)
Date: Fri, 21 Oct 1994 10:55:03 -0700
To: netsig@tapr.org
Message-ID: <199410211754.KAA15225@dopey.qualcomm.com>
Rendered body type: text/plain

> Now if your trying to set up Subnets and set things so the whole
>area can use the tcp part of X1J and forget the netrom stuff, I'm
>interested and have a little to offer. We are trying to subnet the entire
>state of NM. It sounds simple until you try and do it like a almost EE
>student wants. We are using the last 2 octets for 3 things. And must use
>netmask and like that to make things work.

Thanks for the info. I may try TCP/IP later. I have pretty good input on that subject if I want it. We have KA9Q, Phill Karn, working here at our company. I don't think I could do any better than that.

Marvin J. Munster
mmunster@qualcomm.com

****
"As the fading light of a dying day filtered through the window blinds, Roger stood over his victim with a smoking .45, surprised at the sernity that filled him after pumping six slugs into the bloodless tyrant that had mocked him day after day, and then he shuffled out of the office with one last look back at the shattered computer terminal lying there like a silicon armadillo left to rot on the information highway."
****

92. X1J Parms

From: Ron Mackay <rmackay@bud.peinet.pe.ca>
Date: Fri, 21 Oct 1994 19:36:04 -0300 (ADT)
To: TAPR NET SIG <netsig@tapr.org>
Message-ID: <Pine.3.89.9410211959.A1231-0100000@bud.peinet.pe.ca>
Rendered body type: text/plain

Subject: [NETSIG:110] Help with X1J/2 parms
I manage a number of Networks in our region involving more than 30 sites and over 75 nodes. Our NETWORK standard is still TN208.B although X1J is more common for LAN ports.
I believe it would be very benificial to discuss some of these parameters and why there seems to be such variations of opionion.

I find the defaults to very bad in a number of parameters such as default qual, HDLC, qual, RS232 qual and Maxframe. The parms for OPEN NETWORKS are different from Back-bones or LANs but usually only in the above mentioned parms.

Our Network management is based on the principle of "controlled" Node routing & information. Routes are "locked-in" by NodeOps or Managers rather than have them popping in & out (and migrating all over the Network) based on what nodes can "hear" at any moment.
For example, having an HDLC default of 192 (or anything > 144) can cause havoc in a Network where more than 3 or 4 nodes can ever hear each other.

Rather than repeat the whole list I have just isolated those parms -I- would change. The others I agree with your changes or else there isnt signifigant difference from the defaults. Note I didnt step into the TCP/IP stuff, thats a whole other story.

73 - Ron
VE1AIC @VE1AIC.PE.CAN.NOAM

>Column G   is what the settings I have currently set in the E-Prom

```
COLUMN  H   SUGGESTED PARMs *
                                                          *
A       B                  C              E     F    G    H
_____________________________________________________________
                   TheNET Version--->     2.08  X1J2 X1J2
                                          Parm  Parm Parm
          Nr.=TheNET Parm Number--->      Nr.  Dflt ESCN

A       Level 1 parameters
AB  Slot Time (10's of ms)                27    10    20  30
AE  Transmit keyup delay (10's of ms)                 20  35

C       Level 3 parameters
CA  Node alias                                       ESCN
CB  Size of destination node table        17   100   150   80
CC  Minimum auto update quality            1    86   150   45
CD  HDLC (radio port) default quality      2   192   150   50
CE  RS232 (crosslink) default quality      3   255   255   230
CI  Initial 'time to live' (hops)         18    32    32   15

-
```

93. Re: [NETSIG:113] X1J Parms

From: Jack Taylor <n7oo@huachuca-emh8.army.mil>
Date: Fri, 21 Oct 94 16:56:40 MST
To: netsig@tapr.org
Message-ID: <m0qyTz6-0001RFC@dptspd.sat.datapoint.com>
Rendered body type: text/plain

My opinion on node parameters is that the settings depend upon what it is one wants to do with their network. When one isn't sure of what they want, then the defaults generally work out OK.

If P-persistence is set to 255, then the slot-time parameter is disabled. On the backbone, this improves throughput since the node doesn't spend time going through the algorithm routine before releasing its packets. My personal view is this works well on LAN nodes as well. No user complaints during the past 2-3 years this has been done locally.

Regarding the "initial time to live" parameter, twud be nice if when a connect is attempted to a node that's beyond this value, a warning message would come up, stating the node is unreachable. Otherwise, the user could waste time before timing out.

73 de Jack

94. putting radio back into packet radio

From: Dino Moriello <dino@CAM.ORG>
Date: Mon, 24 Oct 1994 00:05:55 -0400 (EDT)
To: netsig@tapr.org
Cc: ve2bmq%ve2fkb@bbs.ve2ums.ampr.org (Burt Lang)
Message-ID: <9410240405.AA14630@Ocean.CAM.ORG>
Rendered body type: text/plain

Hi, A friend of mine, VE2BMQ, is looking for hams who are doing or interested in doing work with radios that are used for packet. He has done many experiments with certain radio parameters and is in the process of writing up test procedures for rigs that would be used on packet. He maintains several nodes and has built up a few digital repeaters for packet and is also the packet radio coordinator for Quebec, Canada.

If you share this interest. i.e. putting the word radio back into packet and have done something in the field he'd like to hear from you.

His packet address is VE2BMQ@VE2FKB, or you can forward your mail to me and I see he gets it.

73 de dino

```
 --
  [  Dino Moriello :  dino@cam.org  or  moriello@rouyn-ogc.hydro.qc.ca    ]
  [  VE2DM@VE2FKB  :  WWW Home Page:          http://www.cam.org/~dino/   ]
  [        "Too boldly go where no one has gone before" - Star Trek       ]
```

95. 9.6 Kbd in 15 Khz?

From: "Rick Whiting" <Rick_Whiting@ATK.COM>
Date: 24 Oct 1994 17:43:45 -0600

To: "Post Netsig TAPR" <netsig@tapr.org>, "Michael Tracy" <mtracy@arrl.org>
Message-ID: <9410242234.AA11994@ATK.COM>
Rendered body type: text/plain

Subject: Time:5:37 PM
  OFFICE MEMO   9.6 Kbd in 15 Khz?   Date:10/24/94
This is a follow-up question regarding coordinating full duplex digital
facilities on traditional voice repeater pairs.

Is it feasible, particularly with respect to adjacent channel interference,
to operate a 9.6 KBd digital facility in a 15 Khz channel, i.e., with a G3RUH
style modem?

I ask because it appears that the reported successful mingling of 9.6 Kbd
digital facilities with voice repeaters on 2M were in geographical areas (or
sub-bands) with 20 KHz channels. In this part of the country the 2M repeater
coordination plan uses 15 Khz channels above 145 MHz.

I believe the designers of the current 9.6 Kbd modems worked pretty hard to
get the signal into a 20 Khz channel (including guard bands). Thus, I wonder
what the operational penalty is for squeezing the channel down by 25%, e.g.,
on S/N requirements, ability to adapt radios, etc.

Comments and suggestions based on practical experience, measurement, and/or
theoretical prognostication will be greatly appreciated.

73/Rick W0TN <rick_whiting@atk.com>

96. Corrupted N*tROM nodes list

From: jra@ag9v.ampr.org
Date: Mon, 24 Oct 1994 19:06:46 -0400 (EDT)
To: netsig@tapr.org
Message-ID: <199410242306.TAA04810@ag9v.ampr.org>
Rendered body type: text/plain

Got a strange problem here --

We're seeing corrupted nodes tables in our G8BPQ and JNOS systems. The
symptom is multiple entries for a single alias, with one being correct and
the other having a bogus callsign, usually (but not always) an extra
character, and that character usually being punctuation.

For example:

DAYSW:N8ACV-4   DAYSW:N8ACV@-4
CMHSW0:K1LT-15 CMHSW:K1LP@-15
MTG:WN7C-3   MTG:WN7C@-3

You get the picture... though sometimes the punctuation character is " ' "
rather than " @ ", and occasionally there are other problems... note that
in CMHSW0 above, K1LT turns into K1LP@.

Any ideas on what's causing this?

73,
John

--
John Ackermann   AG9V
Internet: jra@ag9v.ampr.org
Packet: AG9V@N8ACV.#DAY.OH.USA

97. Re: [NETSIG:117] Corrupted N*tROM nodes list

From: wx3k@wx3k.ampr.org.
Date: Mon, 24 Oct 94 23:52:40 UTC
To: netsig@tapr.org
Message-ID: <351@wx3k.ampr.org.>
Rendered body type: text/plain

I've seen similar corruption in the past on hilltop nodes. It was
always traced to unshielded cables, allowing RF to get into the
lines. This may not be your particular malady, but it's always
worth a look.

73 John

98. Re: [NETSIG:118] Re: Corrupted N*tROM nodes list

From: tmoulton@ram.net
Date: Tue, 25 Oct 94 06:34:41 EDT
To: netsig@tapr.org
Message-ID: <05597.15021573@RAMail>
Rendered body type: text/plain

>From: netsig@tapr.org
>Date: Tue, 25 Oct 94 01:56 CDT
>Reply-To: netsig@tapr.org
>Sender: netsig@tapr.org
>To: netsig@tapr.org
>Subject: [NETSIG:118] Re: Corrupted N*tROM nodes list
>
>I've seen similar corruption in the past on hilltop nodes. It was
>always traced to unshielded cables, allowing RF to get into the
>lines. This may not be your particular malady, but it's always
>worth a look.
>
>73 John
>

Unshielded lines where?

99. Re: [NETSIG:117] Corrupted N*tROM nodes list

From: jkbe@aluxs.att.com (John Bednar)
Date: Tue, 25 Oct 94 08:33:23 EDT
To: netsig@tapr.org
Message-ID: <9410251233.AA05631@lena>
Rendered body type: text/plain

John,

We had a similar problem in one of our node stacks. Our errors
were detected in corrupt bbs bulletins.

We looped data around and around
(#1,#2,#3,#4,#3,#2,#1,#2,#3,#4, etc) thru the
suspecting nodes and then cheched the X1J stats command for
L1 overflows / L1 underruns. This technique allowed us isolated
it to the problem stack. It turned out to be a diode matrix problem.

John, WB3ESS

100. Re: [NETSIG:120] Re: Corrupted N*tROM nodes list

From: tmoulton@ram.net
Date: Tue, 25 Oct 94 11:45:10 EDT
To: netsig@tapr.org
Message-ID: <05599.15021573@RAMail>
Rendered body type: text/plain

>From: netsig@tapr.org
>Date: Tue, 25 Oct 94 07:41 CDT
>Reply-To: netsig@tapr.org
>Sender: netsig@tapr.org
>To: netsig@tapr.org
>Subject: [NETSIG:120] Re: Corrupted N*tROM nodes list
>
>
>John,
>
>We had a similar problem in one of our node stacks. Our errors
>were detected in corrupt bbs bulletins.
>
>We looped data around and around
>(#1,#2,#3,#4,#3,#2,#1,#2,#3,#4, etc) thru the
>suspecting nodes and then cheched the X1J stats command for
>L1 overflows / L1 underruns. This technique allowed us isolated
>it to the problem stack. It turned out to be a diode matrix problem.
>
>
>John, WB3ESS

It sounds like NetRom doesn't have any error checking on the RS-232 link.

Is this true?

101. Re: [NETSIG:116] 9.6 Kbd in 15 Khz?

From: Bdale Garbee <bdale@chunks.gag.com>
Date: Tue, 25 Oct 1994 01:22:45 -0600
To: netsig@tapr.org
Message-ID: <199410250722.BAA12099@chunks.gag.com>
Rendered body type: text/plain

In article <9410242234.AA11994@ATK.COM> you wrote:
: I ask because it appears that the reported successful mingling of 9.6 Kbd
: digital facilities with voice repeaters on 2M were in geographical areas (or
: sub-bands) with 20 KHz channels. In this part of the country the 2M repeater
: coordination plan uses 15 Khz channels above 145 MHz.

We also (Colorado) have the brain-damaged 15khz channel spacing on 2m, but we
don't have a 9600 baud repeater on 2m, so I haven't worried about it.

Not interested in building one, either. 70cm is so much more pleasant to work
with... the cans are rack-mountable, antennas have lower wind load for a given
amount of gain, etc...

73 - Bdale, N3EUA

102. Re: [NETSIG:122] Re: 9.6 Kbd in 15 Khz?

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Tue, 25 Oct 1994 16:12:00 -0600 (MDT)
To: netsig@tapr.org
Message-ID: <Pine.SUN.3.90.941025160342.28244B-100000@kazak>
Rendered body type: text/plain

On Tue, 25 Oct 1994, Bdale Garbee wrote:
> We also (Colorado) have the brain-damaged 15khz channel spacing on 2m, but we
> don't have a 9600 baud repeater on 2m, so I haven't worried about it.

        Bdale, when you start to have 9600 baud users they seem always to
want to use 2 meters. In Pheonix they put up a x1j node on 450 MHz and
asked all the tcp hams to use it and make it the gateway router for the
city. 3 guys got on. So they made a 9600 baud node wired to the other on
144.96 and now there are 20 stations using that for a router.

>
> Not interested in building one, either. 70cm is so much more pleasant to work
> with... the cans are rack-mountable, antennas have lower wind load for a given
> amount of gain, etc...

        Your just getting lazy. Riding up a steep dirt path for 30 miles
with a 2 meter duplexer in your lap, that you tuned on for 5 hours in the
shack and don't want re-tuned by the road, is a real fun experiance.

>
> 73 - Bdale, N3EUA
>
73, de karl k5di

103. FCC files NPRM to sell 2400 MHz Amateur band

From: bruce@pixar.com (Bruce Perens)
Date: Tue, 25 Oct 94 16:44 PDT
To: netsig@tapr.org
Message-ID: <m0qzvY2-0005o8C@mongo.pixar.com>
Rendered body type: text/plain

The FCC has filed the Notice of Proposed Rule Making to transfer the 2400
MHz Amateur Band to commercial services. The privilege of using the band
would be sold at auction. Currently I can't FTP to site FCC.GOV, probably
because so many other people are downloading the NPRM.

    Bruce Perens

104. Re: [NETSIG:123] Re: 9.6 Kbd in 15 Khz?

From: Bdale Garbee <bdale@chunks.gag.com>
Date: Tue, 25 Oct 1994 17:53:46 -0600
To: netsig@tapr.org
Message-ID: <199410252353.RAA12565@chunks.gag.com>
Rendered body type: text/plain

In article <Pine.SUN.3.90.941025160342.28244B-100000@kazak> you wrote:

: Your just getting lazy. Riding up a steep dirt path...

Nah, you're confusing sanity with laziness... :-)

Bdale

105. Re: [NETSIG:123] Re: 9.6 Kbd in 15 Khz?

From: "William L. Barnes" <wlbarn@planetx.bloomu.edu>
Date: Tue, 25 Oct 1994 20:33:08 -0400 (EDT)
To: netsig@tapr.org
Cc: netsig@tapr.org
Message-ID: <Pine.SUN.3.90.941025203100.9929B-100000@planetx>
Rendered body type: text/plain

On Tue, 25 Oct 1994, Klarsen wrote:

> Your just getting lazy. Riding up a steep dirt path for 30 miles
> with a 2 meter duplexer in your lap, that you tuned on for 5 hours in the
> shack and don't want re-tuned by the road, is a real fun experiance.

I've had that problem once before... A friend of mine and I too the
cavity off our local 2 meter repeater and took it over to a technician to
realign... It was perfect on the bench, but didn't survive the ride up
the mountain...

Luckly, we borrowed the tools from someone else and did the realignment
on the mountain...

I would hate to have that experience with a full set of duplexers...

106. 2400 NPRM

From: bruce@pixar.com (Bruce Perens)
Date: Tue, 25 Oct 94 18:06 PDT
To: netsig@tapr.org
Message-ID: <m0qzwow-0005o8C@mongo.pixar.com>
Rendered body type: text/plain

I got to the FCC's server, but can't find the NPRM. The proposal would
reallocate 2390 to 2400, 2402 to 2417, which is less than the entire
2400 MHz band, though if this were to go through I fear that the rest
of the band might soon follow those two segments.

Bruce Perens AB6YM

107. Re: [NETSIG:127] 2400 NPRM

From: dewayne@tetherless.com (Dewayne Hendricks)
Date: Tue, 25 Oct 1994 18:49:40 -0700
To: netsig@tapr.org
Message-ID: <v0211010baad3644cec60@[204.94.180.133]>
Rendered body type: text/plain

>I got to the FCC's server, but can't find the NPRM. The proposal would
>reallocate 2390 to 2400, 2402 to 2417, which is less than the entire
>2400 MHz band, though if this were to go through I fear that the rest
>of the band might soon follow those two segments.
>
> Bruce Perens AB6YM

Let's try to worry about just the current problem. BTW, when is
the last time you did anything on the 2.4 GHz band? Your answer to this
question, is the true nature of the problem. Until that changes, expect
the future to go the way that you indicate above.

-- Dewayne

Dewayne Hendricks, WA8DZP ! CIS: 75210,10 AppleLink: D6547
Tetherless Access Ltd. ! Packet Radio: WA8DZP @ K3MC.#NOCAL.CA.USA.NOAM
43730 Vista Del Mar ! AOL: HENDRICKS
Fremont, CA 94539-3204 ! Internet: dewayne@tetherless.com
Phone: (510) 659-0809 ! Fax: (510) 770-9854
---

108. Re: [NETSIG:124] FCC files NPRM to sell 2400 MHz Amateur band

From: srbible@cs.nps.navy.mil (Steven R. Bible)
Date: Tue, 25 Oct 1994 18:45:45 -0700
To: netsig@tapr.org
Message-ID: <9410260156.AA22651@taurus.cs.nps.navy.mil>
Rendered body type: text/plain

>The FCC has filed the Notice of Proposed Rule Making to transfer the 2400
>MHz Amateur Band to commercial services. The privilege of using the band
>would be sold at auction. Currently I can't FTP to site FCC.GOV, probably
>because so many other people are downloading the NPRM.
>
>   Bruce Perens
>

Bruce, I was all over the FCC.GOV site. I didn't see anything concerning a
NPRM.

For others who want to look...

ftp to ftp.fcc.gov
gopher to fcc.gov
WWW to www.fcc.gov

Steve, N7HPR

srbible@cs.nps.navy.mil
Naval Postgraduate School, Monterey, CA 93943

109. Re: [NETSIG:128] Re: 2400 NPRM

From: bruce@pixar.com (Bruce Perens)
Date: Tue, 25 Oct 94 19:19 PDT
To: netsig@tapr.org, netsig@tapr.org
Message-ID: <m0qzxxb-0005naC@mongo.pixar.com>
Rendered body type: text/plain

Dewayne,

In regard to solving the current problem, I am trying! I joined the board
of the Northern California Packet Association so that I could bring the
word about new technology to existing packet operators.
This weekend at the ARRL Pacific division convention I gave lectures on
9600 baud, TCP/IP, and other packet issues. I spoke for about three
hours in all, including 10 minutes about new technologies at the New
Ham Forum. I operated a table for NCPA and signed up about 90 new members,
as well as selling 84 copies of "Intro to Packet" and 65 of "Intro to
TCP/IP". The weekend before that I spoke at a "Packet Breakfast" and
at a club meeting. I'm also trying to get on the ARRL Spectrum
committee - I know they need someone and have asked to be considered,
but I don't yet know if our Director will allow me. Besides doing all
that, I'm working on new packet software for the Linux system. I think
I'm putting in all the volunteer hours I can!

I am aware of your place on the ARRL future technologies committee and
appreciate that you go out and talk to clubs as I do.

In my opinion one current problem is that newcomers to the hobby are
told they have to tap tap tap like 19th century Western Union operators
if they want to be real hams. Were it not for that you'd see a lot more
newcomers interested in new technology, not preserving history. An
outgrowth of this problem is that new hams don't join ARRL because they
see it as a status-quo-preserving organization.

        Thanks

        Bruce Perens AB6YM

110. Re: [NETSIG:130] Re: 2400 NPRM

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Wed, 26 Oct 1994 01:38:49 -0600 (MDT)
To: netsig@tapr.org
Message-ID: <Pine.SUN.3.90.941026013210.3583B-100000@kazak>
Rendered body type: text/plain

On Tue, 25 Oct 1994, Bruce Perens wrote:
                Lots removed.......

>
> In my opinion one current problem is that newcomers to the hobby are
> told they have to tap tap tap like 19th century Western Union operators
> if they want to be real hams. Were it not for that you'd see a lot more
> newcomers interested in new technology, not preserving history. An
> outgrowth of this problem is that new hams don't join ARRL because they
> see it as a status-quo-preserving organization.

>
>   Thanks
>
>   Bruce Perens AB6YM
>

        That is the best statement of what's wrong with our hobby I have
ever seen! I use cw cuzz I'm 60 years old and am good at it. But the
times have changed. So have I. I spent 90% of my time on cw in 1955. In
1994 I spend 90% of my time at a keyboard on the internet, my packet bbs
and my JNOS.

        Is the change healthy? Is it good for the hobby? I don't know but
we should teach new hams it is alright to not do cw.

-karl k5di

111. Re: [NETSIG:131] Re: 2400 NPRM

From: tmoulton@ram.net
Date: Wed, 26 Oct 94 06:43:52 EDT
To: netsig@tapr.org
Message-ID: <05603.15021573@RAMail>
Rendered body type: text/plain

>From: netsig@tapr.org
>Date: Wed, 26 Oct 94 02:47 CDT
>Reply-To: netsig@tapr.org
>Sender: netsig@tapr.org
>To: netsig@tapr.org
>Subject: [NETSIG:131] Re: 2400 NPRM
>
>
>
>On Tue, 25 Oct 1994, Bruce Perens wrote:
>   Lots removed.......
>
>
>>
>> In my opinion one current problem is that newcomers to the hobby are
>> told they have to tap tap tap like 19th century Western Union operators
>> if they want to be real hams. Were it not for that you'd see a lot more
>> newcomers interested in new technology, not preserving history. An
>> outgrowth of this problem is that new hams don't join ARRL because they
>> see it as a status-quo-preserving organization.
>>
>>   Thanks
>>
>>   Bruce Perens AB6YM
>>
>
>   That is the best statement of what's wrong with our hobby I have
>ever seen! I use cw cuzz I'm 60 years old and am good at it. But the
>times have changed. So have I. I spent 90% of my time on cw in 1955. In
>1994 I spend 90% of my time at a keyboard on the internet, my packet bbs
>and my JNOS.
>
>   Is the change healthy? Is it good for the hobby? I don't know but
>we should teach new hams it is alright to not do cw.
>
>-karl k5di
>
>

Hey didn't we fix that problem when we started offering no code tech?

they get vhf to light with no code requirement...

these licenses have done a lot to grow our ranks...

the problem is that there are onlt experimenters to talk to up there, face it
until there are people to talk to up there and reasonably priced equipment
newcomers (and old timers) are not going come out in drones to use these
bands.

When they attacked 220 they got a message that we are a political group to be
negociated with and we *MUST* insure they get the same message again.

it is going to be harder because we don't have as many *ACTIVE* emitters on
this band.

it is going to be tough.

73, tom
w2vy@ram.net

112. Just FYI: FCC Rules changes for the VE program

From: "Battles, Brian, WS1O" <bbattles@arrl.org>
Date: Wed, 26 Oct 94 11:09:00 EDT
To: TAPR BBSSIG <BBSSIG@tapr.org>,
        "'Finke, Carl (Texas PRS)'" <CARL.FINKE@meipws.mis.mei.com>,
        "'Snodgrass, Jack, KF5MG'" <kf5mg@kf5mg.ampr.org>,
        'TNOS FAQ' <listserv@lantz.cftnet.com>, TAPR NETSIG <NETSIG@tapr.org>,
        'NOS-BBS Mailing List' <nos-bbs@hydra.carleton.CA>,
        "'TAPR PSR (Bob Hansen)'" <psr@tapr.org>, TAPR-BB <TAPR-BB@tapr.org>,
        TCP-Group <TCP-GROUP@UCSD.EDU>
Message-ID: <2EAE7205@arrl.org>
Rendered body type: text/plain

From: Jahnke, Bart, KB9NM
To: 'arrl-ve-list'
Subject: FCC Rules changes for the VE Program - E
Date: Tuesday, October 25, 1994 17:47

The following was released yesterday (Oct 24) as an ARRL Bulletin:

FCC LICENSING CHANGES

The FCC today released a 7-page Order amending its amateur rules, effective December 20, 1994, to reflect what the Commission calls "nonsubstantive procedural changes":

1) To permit electronically filed data from VECs (paper applications will still be accepted);

2) To authorize operation as soon as the new license data appears in the amateur service licensee data base, rather than (as now) when the license document has been delivered (details of how the new licensee can determine his call sign will be announced later);

3) To add a new rules section, "Examinee Conduct," to emphasize that an examinee must comply with the instructions given by the administering VEs;

4) To treat "Technician Plus" as a license class;

5) And to provide for a "renewal short form," which the FCC says will be mailed to licensees in advance of their expiration date beginning sometime in 1995.

Because of the nature of these rule amendments, there's no notice or comment period required by federal law. These changes do not take effect until December 20, 1994.

In addition, a new FCC Form, specifically FCC Form 610-R--a license-renewal short form, will be used by the Commission's in sending license expiration notifications directly to licensees. Regarding renewals, the text of notice also stipulates, "The application must be submitted no more than 90 days before its expiration to: FCC...". Therefore, beginning December 20, 1994, no renewal application will be considered until the license has the last 3 months remaining of it's 10-year term.

113. ET Docket No. 94-32 News Release

From: dewayne@tetherless.com (Dewayne Hendricks)
Date: Wed, 26 Oct 1994 13:16:11 -0700
To: fccreg@tapr.org (TAPR FCC Regulatory List),
        netsig@tapr.org (TAPR Networking List)
Message-ID: <v02110106aad4690c3c70@[204.94.180.133]>
Rendered body type: text/plain

Report No. DC-2666   October 20, 1994

COMMISSION PROPOSES ALLOCATION OF SPECTRUM TRANSFERRED FROM
FEDERAL GOVERNMENT TO PRIVATE SECTOR
(ET DOCKET NO. 94-32)

The Commission today adopted a Notice of Proposed Rule Making that proposes to convert a large block of spectrum from Federal Government to commercial use. This spectrum would be made available for a variety of new services, creating new business opportunities and employment.

The Commission has proposed a general allocation to the Fixed and Mobile services for 50 megahertz of spectrum identified by the Department of Commerce for transfer from Federal Government use to private sector use. The Commission said the proposed allocations will benefit the public by providing for the introduction of new services or the enhancement of existing services.

In compliance with the provisioins of Title VI of the Omnibus Budget Reconciliatioin Act of 1993, the Department of Commerce released a report on Febuary 10, 1994, which made preliminary identification of 200 megahertz of spectrum for reallocation from Federal Government to private sector use, including 50 megahertz at 2390-2400 MHz, 2402-2417 MHz, and 4660-4685 MHz that is immediately available. The Reconciliation Act requires the Commission to adopt rules by February 10, 1995, to allocate the spectrum.

The Commission stated that its prinipal objective when making spectrum allocation decisions is to ensure that the spectrum is put to its best use. The Commission proposed to achieve this goal by proposing a broad and general allocation to the Fixed and Mobile services for all three frequency bands. Such an approach, the Commission said, would allow for flexible use of these bands so that licenses would be able to offer a wide range of services employing a variety of technologies. The Commission requested comment on this approach.

The Commission also believes that most of the services to be provided in this spectrum would likely meet the statutory criteria for auctions. Therefore, the Commission proposed to make licenses for this spectrum available through competitive bidding to the extent possible and practicable.

The Commission seeks to create a competitive market structure that would promote reasonable prices for users and provide operators with incentives to develop and introduce innovative service features and technologies. The Commission requests comment on an appropriate licensing structure, including channel block size and geographic licensing areas.

The Commission also proposed to allow technical flexibility in the provision of services. Specifically, the Commission proposed to allow users to choose the channelization, signal strength, modulation techniques and antenna characteristics in providing service, consistent with not causing interference to other users. Interference to operations in adjacent service areas would be controlled through power limits at the service area boundaries. Licensees would also be free to negotiate and develop agreements for interference conditions at the boundaries between their service areas. Comments are requested on these proposals.

As an alternative to allocating this spectrum generally for Fixed and Mobile services, the Commission requested comment on the possible allocation of these bands for specific communications services. A number of suggestions were put forth by various commenters responding to the Notice of Inquiry (NOI) in this proceeding. There include an aeronautical audio/video service to provide real-time information and entertainment aboard aircraft, wireless local loop service, broadcast auxiliary services to support advanced television, low-power communications, and continued use of some of this spectrum by the amateur community.

Action by the Commission October 20, 1994, by Notice of Proposed Rulemaking (FCC 94-272). Chairman Hundt, Commissioners Quello, Barrett, Ness and Chong.

News Media contact: Susan Sallet and Patricia A. Chew at (202) 418-0500.
Office of Engineering and Technology contact: Steve Sharkey at (202) 653-8151.

Dewayne Hendricks, WA8DZP ! CIS: 75210,10 AppleLink: D6547
Tetherless Access Ltd. ! Packet Radio: WA8DZP @ K3MC.#NOCAL.CA.USA.NOAM
43730 Vista Del Mar ! AOL: HENDRICKS
Fremont, CA 94539-3204 ! Internet: dewayne@tetherless.com
Phone: (510) 659-0809 ! Fax: (510) 770-9854

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114. FCC ET Docket 94-124 - FYI

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From: dewayne@tetherless.com (Dewayne Hendricks)
Date: Wed, 26 Oct 1994 14:16:13 -0700
To: fccreg@tapr.org (TAPR FCC Regulatory List),
        netsig@tapr.org (TAPR Networking List),
        tcp-group@UCSD.EDU (UCSD TCP/IP Networking List)
Message-ID: <v0211010eaad4711f2218@[204.94.180.133]>
Rendered body type: text/plain

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Report No. DC-2667      ACTION IN DOCKET CASE           October 20, 1994

        NEW RULES PROPOSED TO INCREASE THE AMOUNT OF SPECTRUM AVAILABLE
                            FOR COMMERCIAL USE
                            (ET DOCKET 94-124)


        The Commission has proposed making available 18 GHz of spectrum in
the "millimeter wave" frequency bands above 40 GHz for the introduction and
development of new commercial technologies.  This allocation would
substantially increase the amount of spectrum space available for
commercial uses and could shift the emphasis in this band from military to
civilian applications.  The same type of ttechnology that is being
developed to guide "smart bombs" could soon be used to warn drivers that
their car is too close to the one in front of them.

        The term millimeter wave frequency bands refers to the fact that
the wavelength of radio signals on frequencies between 30 GHz and 300 GHz
ranges from one and 10 millimeter waves.

        Until now, millimeter wave technology has been limited to military
and scientific applications.  The new proposals for commercial use of this
spectrum will encourage its use to deliver commercial products and
services.

        Making these new frequencies available will permit the development
of short-range wireless radio systems that could have communications
capacities approaching those now achievable only with coaxial and optical
fiber cable.  Such systems could support many short-range applications that
require very high bandwidth or data transfer rates.  Uses could include
educational or medical applications such as remote wireless access to
libraries or other informational databases; and non-communication uses such
as automobile radar systems to avoid collisions.

        The proposed rules provide for the operation of new services on
both licensed and unlicensed bases.  The short range of signals in this
frequency range minimizes the potential for interference, allowing the
Commission to permit unlicensed operation for many uses.

        The radio spectrum above 40 GHz is generally unused because the
technology to operate in this portion of the spectrum has been
prohibitively expensive.  In recent years, however, the U.S. Government has
funded projects in millimeter wave technology for a number of military and
scientific applications.  The Defense Department's Advanced Research
Projects Agancy has funded a nearly $600,000,000 program to decrease
component costs for this technology.  Given these advances, the Commission
said, it now appears that millimeter wave technology can be used for
commercial applications.

        The Commission is proposing to open a substantial portion of
millimeter wave spectrum for use by new communications services and
technologies.  Almost all of the spectrum above 40 GHz is shared between
government and non-government use.  In cooperation with the Department of
Commerce's National Telecommunications Information Administration (NTIA),
the Commission identified 12 frequency bands between 47 GHz and 153 GHz for
potential use by new millimeter wave technologies.  The Commission
tentatively proposed to to make available 6.3 GHz of spectrum for licensed
operation, 8.5 GHz of spectrum for general unlicensed devices, and 3.2 GHz
of spectrum for vehicular radar systems.

        The bands are: 40.5-42.5 GHz; 47.2-48.2 GHz; 59.0-64.0 GHz;
71.0-72.0 GHz; 76.0-77.0 GHz; 84.0-85.0 GHz; 94.7-95.7 GHz; 103.0-104.0
GHz; 116.0-117.0 GHz; 122.0-123.0 GHz; 126.0-127.0 GHz; 139.0-140.0 GHz;
and 152.0-153.0 Ghz.

        Action by the Commission October 20, 1994, by Notice of Proposed
Rulemaking (FCC 94-273).  Chairman Hundt, Commissioners Quello, Barrett,
Ness and Chong.
```

News Media contacts: Audrey Spivack and Rosemary Kimball at (202) 418-0500
Office of Engineering and Technology contacts: Dr. Michael Marcus at (202)
653-8110, email: mmarcus@fcc.gov or David Wilson at (202) 653-8138, email:
dwilson@fcc.gov.

Dewayne Hendricks, WA8DZP ! CIS: 75210,10   AppleLink: D6547
Tetherless Access Ltd.   ! Packet Radio: WA8DZP @ K3MC.#NOCAL.CA.USA.NOAM
43730 Vista Del Mar   ! AOL: HENDRICKS
Fremont, CA 94539-3204   ! Internet: dewayne@tetherless.com
Phone: (510) 659-0809   ! Fax: (510) 770-9854
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115. Equipment for a Digital Repeater???

From: ESTEY@SKYLER.MAVD.HONEYWELL.COM
Date: Wed, 26 Oct 1994 16:19:09 -0500 (CDT)
To: netsig@tapr.org
Message-ID: <941026161909.3320022f@SKYLER.MAVD.HONEYWELL.COM>
Rendered body type: text/plain

From: SKYLER::ESTEY   26-OCT-1994 11:46:27.43
To: SMTP%"netsig.tapr.org"
CC: ESTEY
Subj: Equipment for a Digital Repeater?

During the last few weeks Rick, W0TN, and I have asked about NETSIG user
experiences with digital repeaters. He and I are part of a TwinsLAN (local
digital communications club) "network enhancement" task force. He has asked
for your input on digital repeaters and potential interference problems and
issues like what bandwidth (channel spacing) do they require and do they work
ok on 15 and 20 Khz channels?

My questions were directed to can 9600, 4800 and 1200-baud be used on the
same channel at the same time. Your answers indicated a solid "NO
- build a seperate repeater for eacc speed". I also asked about sharing
voice and data on the same frequency ... and again you unanimously said "NO"!

Now, for the new questions ..... if we want to build a digital repeater
what to we need? Obviously we need a basic repeater (I assume without
any fancy control stuff like autopatch, voice ID, etc.); a TNC (does it
neet the bit regerator); a high speed modem; duplexor; and antenna. Can
you make specific recommendations? What we are really asking is "how do
we start and what do we need? Lets limit discussion to these areas and
exclude antennas and duplexors since this has had a lot of verbage recently
(but if you have some great new ideas, we are very interested in them!):
TNC:
MODEM:
BIT REGENERATOR:
FIRMWARE:
HOW TO TIE INTO EXISTING NETWORKS:
CONFIGURATION AND INTERCONNECTION:
REPEATER "RF" GEAR RECOMMENDATIONS:

Any PSR or DCC proceeding references will be appreciated! Think of this in
terms of "If I were doing this again, what would I want to know about digital
repeaters?"

You are the textbooks ... and we appreciate your sharing the wealth of
knowledge!

73
Carl WA0CQG

116. Re: [NETSIG:136] Equipment for a Digital Repeater???

From: bruce@pixar.com (Bruce Perens)
Date: Wed, 26 Oct 94 15:49 PDT
To: netsig@tapr.org
Message-ID: <m0r0H9i-0005oFC@mongo.pixar.com>
Rendered body type: text/plain

> Now, for the new questions ..... if we want to build a digital repeater
> what to we need? Obviously we need a basic repeater (I assume without
> any fancy control stuff like autopatch, voice ID, etc.); a TNC (does it
> neet the bit regerator); a high speed modem; duplexor; and antenna. Can
> you make specific recommendations? What we are really asking is "how do
> we start and what do we need? Lets limit discussion to these areas and
> exclude antennas and duplexors since this has had a lot of verbage recently

> (but if you have some great new ideas, we are very interested in them!):

You don't need a TNC, unless you want to use it to transmit ID beacons
for the repeater, or you want to use it to control the repeater. You
should use a bit-regenerator, as there are very significant advantages
to be gained from using one (do you want the lecture on that?) and no
disadvantages that I know of, not even cost. You do need a modem, though
the modem and the bit regenerator are generally part of the same board.

Most people use the TAPR 9600 modem with the bit-regeneration and
stand-alone-clock modifications. That's really all you need outside of
the radio for a basic repeater, though you end up putting a TNC somewhere
in the system to identify the repeater, and you provide an out-of-band
control channel for the repeater. The out-of-band control channel can
be as simple as switching the repeater power using a control output of
another repeater at the same site, or you can use a TNC and transceiver
for the control link.

I have most of this stuff sitting on a shelf in El Cerrito, California,
along with a bunch of Micor and Mitrex radios, waiting until there are
enough people running 9600 to support a 9600 repeater in our area. It
sounds as if that will happen in early 1995.

        Bruce Perens AB6YM

117. Re: [NETSIG:121] Re: Corrupted N*tROM nodes list

From: tmoulton@ram.net
Date: Thu, 27 Oct 94 07:01:44 EDT
To: netsig@tapr.org
Message-ID: <05609.15021573@RAMail>
Rendered body type: text/plain

>From: netsig@tapr.org
>Date: Tue, 25 Oct 94 10:48 CDT
>Message-Id: <05599.15021573@RAMail>
>Reply-To: netsig@tapr.org
>Sender: netsig@tapr.org
>To: netsig@tapr.org
>Subject: [NETSIG:121] Re: Corrupted N*tROM nodes list
>
>>From: netsig@tapr.org
>>Date: Tue, 25 Oct 94 07:41 CDT
>>Reply-To: netsig@tapr.org
>>Sender: netsig@tapr.org
>>To: netsig@tapr.org
>>Subject: [NETSIG:120] Re: Corrupted N*tROM nodes list
>>
>>
>>John,
>>
>>We had a similar problem in one of our node stacks. Our errors
>>were detected in corrupt bbs bulletins.
>>
>>We looped data around and around
>>(#1,#2,#3,#4,#3,#2,#1,#2,#3,#4, etc) thru the
>>suspecting nodes and then cheched the X1J stats command for
>>L1 overflows / L1 underruns. This technique allowed us isolated
>>it to the problem stack. It turned out to be a diode matrix problem.
>>
>>
>>John, WB3ESS
>
>It sounds like NetRom doesn't have any error checking on the RS-232 link.
>
>Is this true?
>

Does anyone know the answer to this?

118. Re: [NETSIG:136] Equipment for a Digital Repeater???

From: rdonnell@eskimo.com (Bob Donnell)
Date: Thu, 27 Oct 1994 05:00:21 -0700 (PDT)
To: netsig@tapr.org
Message-ID: <199410271200.AA18727@eskimo.com>
Rendered body type: text/plain

> Now, for the new questions ..... if we want to build a digital repeater
> what to we need? Obviously we need a basic repeater (I assume without
> any fancy control stuff like autopatch, voice ID, etc.); a TNC (does it

> neet the bit regerator); a high speed modem; duplexor; and antenna. Can
> you make specific recommendations? What we are really asking is "how do
> we start and what do we need? Lets limit discussion to these areas and
> exclude antennas and duplexors since this has had a lot of verbage recently
> (but if you have some great new ideas, we are very interested in them!):

Assuming a 9600 system...

> TNC:

Not strictly necessary. If there are no on-site links to other locations, a
stand-alone modem/bit regenerator is sufficient. Off-site links work as
well as on-site, as all stations can hear all stations. Avoids problems
with >more< transmitters/receivers at the repeater site.

> MODEM:

TAPR 9600 modem kit with clock and bit-regen options.

> BIT REGENERATOR:

See above

> FIRMWARE:

None needed if no TNC on-site.

> HOW TO TIE INTO EXISTING NETWORKS:

Add a TNC/Radio in a "user" configuration at either 1) a nearby access
point ot the desired network, or 2) add a gateway station that can work into
the repeater and the desired existing network.

> CONFIGURATION AND INTERCONNECTION:

With the TAPR modem,DCD, PTT (and timeout) are handled by the modem. A DTMF
decoder and latches can complete the control circuitry.

> REPEATER "RF" GEAR RECOMMENDATIONS:

OUr group has had good sucess with GE MastrII and MVP mobile hardware. In
particular we've found that these can be used without requiring
modifications to the IF strips for receiving, and the documentation
available to us so far has allowed what other modifications are needed to be
done to improve transmitter switching characteristics. The isolation
between TX and RX stages is adequate in the MastrII's to use one chassis for
the complete repeater RF deck. With a little more shoehorning we might have
gotten the modem inside the case too.

>
> 73
> Carl WA0CQG
>

73 yourself! :)

Bob, KD7NM

| Bob Donnell, KD7NM   bob@ethanac.kd7nm.ampr.org   rdonnell@eskimo.com |
| Western Washington Amateur IP Address Coordinator   (206) 775-3651 |
----

119. TEKK 1st IF filters

From: jkbe@aluxs.att.com (John Bednar)
Date: Thu, 27 Oct 94 11:18:45 EDT
To: netsig@tapr.org
Message-ID: <9410271518.AA01165@lena>
Rendered body type: text/plain

I am looking for a source of 1st IF crystal filters
for TEKK data radios. I'd like to change the receive
filters and experiment at higher data rates. I have a
source for the 455 khz filter but I'm still looking
for the 1st IF filter.

Piezo Technologies makes filters however, they quoted me
a price of $60 !!

John, WB3ESS

120. Tekk data radio mods

From: jkbe@aluxs.att.com (John Bednar)
Date: Thu, 27 Oct 94 11:15:01 EDT
To: netsig@tapr.org
Message-ID: <9410271515.AA01162@lena>
Rendered body type: text/plain

(I posted this several weeks ago but I never saw it appear on the
Reflector. Sorry if I missed it....)

Attached you will find modifications for both model Tekk radio's that improve
the receive and transmit performance at 9600bps. It's reported that both TEKK
and PacComm have been making some/all of these modifications. I have no idea
when they implemented these changes.

John, WB3ESS

Tekk Data Radio Mods for 9600 bps
by John Bednar, WB3ESS
Original Issue:12/93
Last update: 5/16/94

TEKK KS-900L Receiver Mods
At the 9-pin interface connector add a 2.7k ohm resistor in
series with the wire going to pin 5. Next, solder a 0.001uf
capacitor between pin 2 and pin 5 of the same connector.

TEKK KS-900L Transmitter Mods
Solder a 3.3uf tantalum capacitor (observe the polarity) in
parallel with capacitor C31. The transmit requirements are not
changed so re-adjusting the transmit level will not be required.

TEKK KS-960L Receiver Mods
Remove chip capacitor C18 and replace it with a 0.001uf leaded
capacitor or chip capacitor.

TEKK KS-960L Transmitter Mods
Bypass the transmit limiter, modify the modulator, and inject the
audio into TP9 with the following steps:
1) Remove the wire attached to pin 4 of the 9-pin connector and
solder it to ground.
2) Solder the (+) lead of a 10uf tantalum capacitor with 0.2"
leads to the 9-pin connector - pin 4.
3) Prepare a 1.8" piece of wire with 0.2" ends and solder one end
of the wire to the (-) lead of the capacitor added in step 2.
Tuck the other end of the wire around the circuit board in the
corner. Don't use the corner where the BNC is mounted.
4) Locate the junction of C43, C92, and R41. Form the wire, trim
the end to 0.1" and solder it carefully to this junction.
5) Locate the junction of R43 and C47. Carefully remove the
solder from that solder pad. With a sharp knife cut the trace
diagonally between R43 and C47. Check your cut with an ohm
meter to insure that the trace is open. If you break R43, C47,
C48 or C49 don't worry because these parts are no longer used.
6) Locate potentiometer VR1 and turn it fully CW.
7) Re-adjust the transmit frequency and the transmit deviation.

(A complete article with frequency response graphs will appear in
the January 94 Northeast Digital Association Quarterly. As of 10/94
this issue has not been printed.)

121. Re: [NETSIG:140] TEKK 1st IF filters

From: Glenn Elmore <glenne@eagle.sr.hp.com>
Date: Thu, 27 Oct 1994 09:03:36 -0800 (PDT)
To: netsig@tapr.org
Message-ID: <9410271603.AA19318@eagle.sr.hp.com>
Rendered body type: text/plain

>
> I am looking for a source of 1st IF crystal filters
> for TEKK data radios. I'd like to change the receive
> filters and experiment at higher data rates. I have a
> source for the 455 khz filter but I'm still looking
> for the 1st IF filter.
>
> Piezo Technologies makes filters however, they quoted me
> a price of $60 !!
>
> John, WB3ESS

 I suspect that higher price is going to be the rule rather than the
exception for quartz filters of this type unless someone can find a
high volume application that already uses something 30-50KHz wide.
  If it will help, John, I think I can come up with a few 30 KHz wide
filters centered on 20.0 MHz. Along with your wider 2nd IF filteres
this would let you try things out at 19.2 kbaud. However, I don't have
a large quantity source for these, they're just something I think I have
stuffed away in a drawer.

73
Glenn Elmore n6gn

amateur IP: glenn@SantaRosa.ampr.org
Internet: glenne@sr.hp.com

122. Re: [NETSIG:136] Equipment for a Digital Repeater???

From: jra@ag9v.ampr.org
Date: Wed, 26 Oct 1994 20:06:23 -0400 (EDT)
To: netsig@tapr.org
Message-ID: <199410270006.UAA29753@ag9v.ampr.org>
Rendered body type: text/plain

You (ESTEY@SKYLER.MAVD.HONEYWELL.COM) write:

>Now, for the new questions ..... if we want to build a digital repeater
>what to we need? Obviously we need a basic repeater (I assume without
>any fancy control stuff like autopatch, voice ID, etc.); a TNC (does it
>neet the bit regerator); a high speed modem; duplexor; and antenna. Can
>you make specific recommendations? What we are really asking is "how do
>we start and what do we need? Lets limit discussion to these areas and
>exclude antennas and duplexors since this has had a lot of verbage recently
>(but if you have some great new ideas, we are very interested in them!):
>TNC:
>MODEM:
>BIT REGENERATOR:
>FIRMWARE:
>HOW TO TIE INTO EXISTING NETWORKS:
>CONFIGURATION AND INTERCONNECTION:
>REPEATER "RF" GEAR RECOMMENDATIONS:

Hi Carl --

I see a couple of other messages have been posted recently, but a couple of
comments from our experience with 19.2kB repeaters, and soon a 9600 baud one.

You <will> want to hook up a TNC to provide a link from the repeater channel
to a network backbone, another user freq, or whatever. The TAPR 9600 modem
provides for this quite easily. The best bet is probably to build the
modem into a TNC-2 box and kill two birds with one stone.

The other suggestion is that you make sure you have some RF folks in the
group (I know that's not a problem with your group, but a general comment).
Although repeaters aren't black magic, there's a big advantage to having
someone around who's dealt with intermod, desense, and all the other fun
stuff involved in repeater building.

73,
John
--
John Ackermann   AG9V
Internet: jra@ag9v.ampr.org
Packet: AG9V@N8ACV.#DAY.OH.USA

123. Re: [NETSIG:142] Re: TEKK 1st IF filters

From: rdonnell@eskimo.com (Bob Donnell)
Date: Thu, 27 Oct 1994 14:24:44 -0700 (PDT)
To: netsig@tapr.org
Message-ID: <199410272124.AA26289@eskimo.com>
Rendered body type: text/plain

```
>
> >
> > I am looking for a source of 1st IF crystal filters
> > for TEKK data radios. I'd like to change the receive
> > filters and experiment at higher data rates. I have a
> > source for the 455 khz filter but I'm still looking
> > for the 1st IF filter.
> >
> > Piezo Technologies makes filters however, they quoted me
> > a price of $60 !!
> >
> > John, WB3ESS
>
>
>  I suspect that higher price is going to be the rule rather than the
> exception for quartz filters of this type unless someone can find a
> high volume application that already uses something 30-50KHz wide.
>   If it will help, John, I think I can come up with a few 30 KHz wide
> filters centered on 20.0 MHz.  Along with your wider 2nd IF filteres
> this would let you try things out at 19.2 kbaud.  However, I don't have
> a large quantity source for these, they're just something I think I have
> stuffed away in a drawer.
>
> 73
> Glenn Elmore n6gn
>
> amateur IP:   glenn@SantaRosa.ampr.org
> Internet:     glenne@sr.hp.com
>
>
>
>
One potential mass-market application is television audio-only recievers.
TV uses a peak deviation of +- 25 kHz, so you mght end up with a 70 kHz
filter.

73, Bob
-------------------------------------------------------------------------------
|  Bob Donnell, KD7NM     bob@ethanac.kd7nm.ampr.org   rdonnell@eskimo.com |
|  Western Washington Amateur IP Address Coordinator   (206) 775-3651      |
-------------------------------------------------------------------------------
```

124. NEDA Question....

From: <MITCHELL.T@OCF.compuserve.com>
Date: 27 Oct 94 17:32:52 EDT
To: <netsig@tapr.org>
Message-ID: <OCF_3442-45860@CompuServe.COM>
Rendered body type: text/plain

```
*Message:
From: MITCHELL.T at CCPO.KCPO
Date: 10/27/94 4:23PM
To: INTERNET:netsig@tapr.org at OCF_INFORM
Subject: NEDA Question....
Contents:

I want to join NEDA, however I can not get any response from
them by mail.  Does anyone have a good address or fone number
or even an E-Mail account number?

I guess I procrastinated too long, and lost my chance since
Dayton!


Tim KA5RYF/0
```

125. Re: [NETSIG:138] Re: Corrupted N*tROM nodes list

From: Steve Schwarm <schwarm@spectre.mitre.org>
Date: Thu, 27 Oct 1994 17:40:35 -0400
To: netsig@tapr.org
Message-ID: <199410272140.RAA13145@spectre.mitre.org>
Rendered body type: text/plain

> >
> >It sounds like NetRom doesn't have any error checking on the RS-232 link.
> >
> >Is this true?
> >
>
> Does anyone know the answer to this?

Most RS-232 serial links do not have error checking. This is
required if the link is to send 8 bit binary data. Back in
the good old days most serial links would run ASCII with one
of the 8 bits used as parity. In our terminal programs, we
normally run 8N which means 8 bits no parity, but if we ran
7O or 7E (7 bits odd parity or 7 bits even parity) there would
be some error checking. The real problem is that what would
the software do if there was an error. Most systems do
nothing so why bother. If you want to send 8 bit binary data
or use the full ISO character set (such as Latin 1) so that
non english text can be represented, you can not use parity.

Stephen(Steve) Schwarm, W3EVE
Principal
The MITRE Corp.
202 Burlington Rd MS B155
Bedford, MA 01730
(617)271-4600
FAX: (617)271-4686
Schwarm@mitre.org
Packet: W3EVE @ K1UGM.#EMA.MA.USA.NA

126. Re: [NETSIG:145] NEDA Question....

From: Greg Jones <gjones@tenet.edu>
Date: Thu, 27 Oct 1994 18:22:06 -0500 (CDT)
To: netsig@tapr.org
Message-ID: <199410272322.SAA27804@Kay-Abernathy.tenet.edu>
Rendered body type: text/plain

If you do get of hold of someone in NEDA - please let them know that I am
looking to get in contact with someone there about some TAPR related things.

Cheers - Greg

According to MITCHELL.T@OCF.compuserve.com:
>
>
> *Message:
> From: MITCHELL.T at CCPO.KCPO
> Date: 10/27/94 4:23PM
> To: INTERNET:netsig@tapr.org at OCF_INFORM
> Subject: NEDA Question....
> Contents:
>
> I want to join NEDA, however I can not get any response from
> them by mail. Does anyone have a good address or fone number
> or even an E-Mail account number?
>
> I guess I procrastinated too long, and lost my chance since
> Dayton!
>
>
> Tim KA5RYF/0
>
>
>

127. Re: [NETSIG:145] NEDA Question....

From: Jim Neely <jneely@tenet.edu>
Date: Thu, 27 Oct 1994 19:21:56 -0500 (CDT)
To: netsig@tapr.org
Message-ID: <199410280021.TAA01221@Kay-Abernathy.tenet.edu>
Rendered body type: text/plain

According to MITCHELL.T@OCF.compuserve.com:
>
>
> *Message:
> From: MITCHELL.T at CCPO.KCPO
> Date: 10/27/94 4:23PM
> To: INTERNET:netsig@tapr.org at OCF_INFORM

> Subject: NEDA Question....
> Contents:
>
> I want to join NEDA, however I can not get any response from
> them by mail. Does anyone have a good address or fone number
> or even an E-Mail account number?
>
> I guess I procrastinated too long, and lost my chance since
> Dayton!
>
>
> Tim KA5RYF/0

I just got a mailing from them with the following address:

NEDA
P.O. Box 563
Manchester NH 03105.

73...jn
WA5LHS

128. Users and 9600 baud

From: LARSEN KARL AMSRL-SL-EC 505-678-3145 <klarsen@arl.army.mil>
Date: Fri, 28 Oct 1994 14:14:49 -0600 (MDT)
To: Sig Networking <netsig@tapr.org>
Cc: TCP digest <tcp-group@ucsd.edu>
Message-ID: <Pine.3.87.9410281449.A15646-0100000@mercury>
Rendered body type: text/plain

Talking with Roy N5RG today he said something that is right. WWe
were talking about our 9600 baud modems and radios. And about only 2
other 9600 baud stations. Roy said that while information theory and
experiance tells us to run 1200 baud on the long runs but make the local
links much faster, like 9600 baud.

        The problem is that the ordinary ham isn't capable of making 9600
baud work. The 2 stations in El Paso, TX which are run not as nodes but
as personal JNOS connects to the network are having lots of problems.
This is not do to weak signals. They both have line-of-sight to the node
#ELP. But they are not Engineers and don't have an oscilliscope to
display eye waveforms or a Service Monitor to set frequency and transmit
deviation. So they are not able for reasons of training and equipment to
get 9600 baud systems working.

        So lets be reasonable and admit that the new No Code Ham is not
going to have a scope, or freq. meter or any of that stuff. But if we are
successful we infect them with a desire to try TCP/IP and packet radio in
general. These fine people will buy a tnc and with lots of trouble get it
connected to the new HT they just got.

        At 1200 baud it's a good guess the radio will be fine for the
narrow 1200 baud spectrum. They get it running and begin to learn about
packet and computers and the fun. After awhile they may want to try a
faster system. We must either get smart and design a 2400 or 4800 baud
modem that will ALSO run fine with the HT, and give them more speed. But
we must be honest with them and say NO! Do NOT buy a 9600 baud modem!

-karl k5di

129. Microwave bandplan proposal

From: Jack Taylor <n7oo@huachuca-emh8.army.mil>
Date: Fri, 28 Oct 94 12:44:31 MST
To: netsig@tapr.org
Message-ID: <m0r0y0G-0001NLC@dptspd.sat.datapoint.com>
Rendered body type: text/plain

Follows is a message from VK4FXL discussing a standardized microwave band-
plan proposal. His concept appears to be a good one. While he primarily
addresses satellite useage, we need to look at the microwave bands for
high speed data links. Nodal sites having a common oscillator/translator
scheme makes sense when multiple bands are used. Are we at a point where
input to this plan can be made relative to our interests?

                          begin forwarded message
==
>From   : VK4FXL
To   : UHF   @WW
Type/status : B$

Date/time   : 22-Oct 11:08
Bid   : 11393_VK4CXX
Message #   : 100365
Title   : VK4FXL MICROWAVE BANDPLAN

From: VK4FXL@VK4CXX.BNE.QLD.AUS.OC
To : UHF@WW

ABSTRACT

THERE ARE NO AMATEUR BANDS BETWEEN 148 MHZ AND 24 GHZ.....

There are some Secondary allocations which Amateurs are allowed to use until the spectrum is needed by other users. Last year I wrote an article for the AMSAT UK Colloquium concerning the 5 GHz band. Apparently this article was well received, and was presented at the AMSAT NA conference and I believe it was translated for AMSAT DL. Since then, I have thought further on the subject and came up with more ideas, mainly concerning the bandplan between 430 MHz and 81 GHz. The erosion of "our" Amateur bands is inevitable, and serious efforts must be made to obtain Primary Allocation status for some sections of the spectrum.

THE REGION 1 TO 81 GHZ

If you ever see a chart of the noises and losses in the radio spectrum you will see that man made and natural electrical noises decline rapidly as the frequency rises but that cosmic and galactic noises begin to rise up and other factors like water and oxygen absorbtion become significant above 10 GHz. There is a definite dip in the chart around 4 GHz and this is the quietest part of the spectrum, and is probably why the C Band Satellite downlink allocation is there. The region from 1 to 10 GHz is prime real estate in the spectrum and Amateurs should be trying to obtain primary allocations there.

MICROWAVES AND THE TYPICAL AMATEUR

Many Amateurs might question why do we need these microwave bands. Think back 30 years. Who could have thought that 2 mtrs would have become full of users to the point of becoming almost useless with QRM. Who could even think that requency synthesisers would be invented. These bands will gradually fill up and it is important to have a really useful bandplan so that we may get onto them with the minimum of difficulty, equipment and cost and relative ease of understanding what frequency we are on.

In the past, most microwave work has revolved around the magic frequency of 1152 MHz and its multiples. That may have been OK in the past, but the drawbacks are significant. Certainly spot frequencies can be derived like 2304 3456 5760 10368 and 24192 MHz but any variation of the original frequency to produce an offset like 2304.1 does not carry through. Then there is the problem of receive local oscillators where a separate local oscillator chain is required which may not have any common frequency with the transmit chain. What we need is ONE COMMON BND to use as an IF and ONE COMMON BASE FREQUENCY to derive ALL LOCAL OSCILLATORS for both TX and RX at the seven bands of interest. The concept is to transvert the entire band 430 to 440 MHz to other bands, and maintain a constant set of frequencies in these other bands so that when operating there we are actually always using a 70 cm transceiver to derive our ultimate frequency and should keep all or most of the 70 cm bandplan to reduce the mental gymnastics of trying to figure out what frequency and sub band we are on.

By translating the entire 70 cm band, we also keep all modes like Moonbounce, CW, SSB, Beacons, Narrow Band FM and the Satellite bands together so that we dont need to have separate equipment to operate terrestrial or satellite as we have now. This way we DONT have a "them and us" situation, and I FEEL THIS IS VITALLY MPORTANT. Check the following table of frequencies.

Start	Mbounce	SSB(P/C)	SSB(S/C)	Beacons	NBFM	Satellite	NBFM	End
430	432.0	432.1	432.2	432.4	433.0	435.0	438.0	440
2430	2432.0	2432.1	2432.2	2432.4	2433.0	2435.0	2438.0	2440
3430	3432.0	3432.1	3432.2	3432.4	3433.0	3435.0	3438.0	3440
5830	5832.0	5832.1	5832.2	5832.4	5833.0	5835.0	5838.0	5840
10030	10032.0	10032.1	10032.2	10032.4	10033.0	10035.0	10038.0	10040
24030	24032.0	24032.1	24032.2	24032.4	24033.0	24035.0	24038.0	24040
47030	47032.0	47032.1	47032.2	47032.4	47033.0	47035.0	47038.0	47040
81630	81632.0	81632.1	81632.2	81632.4	81633.0	81635.0	81638.0	81640

 5650 to 5700 Amateur Satellite downlinks only.
10450 to 10500 Amateur Satellite downlinks only.
Study the drawings to see how these bands are derived.

```
100 X10 = 1000 X2 = 2000 + 430 =  2430*
          1000 X3 = 3000 + 430 =  3430*

100  X9 =  900 X6 = 5400 + 430 =  5830*

100  X8 =  800 X6 = 4800 + 850 =  5650*                 850 - 800 = 50*
                     4800    X2 =  9600 + 850 = 10450*   850 - 800 = 50*
                                   9600 + 430 = 10030*

                                   9600    X2 = 19200 + 4830    =   24030*
100 X11 = 1100 X4 = 4400                                4830 - 4400 = 430*

           19200 X2 = 38400 + 8630    =   47030*
                                  8630 - 8200 = 430*
800 + 1100 = 1900 X2 = 3800 + 4400 = 8200

38400 X2 = 76800 + 4830 = 81630*  (4830 is common to the 24 GHz segment.)

  75500* - 76800 = 1300* (This is an oddity. This band can use 23 cm but it
  75550* - 76800 =1250*  will be inverse tuning.)
```

Note that the 5 GHz segment is in the current satellite downlink allocation. I am recommending that the 5 GHz up and down link allocation be reversed to fit this plan. Currently no satellite in orbit uses this band and only Amsat Phase 3D has equipment under construction and it must remain on its allocation because that is the CURRENT LEGAL ALLOCATION. I do not recommend any changes to the P3D bandplan, as what I am suggesting in this article is just that... suggestions. It will take a long time for these recommendations to come about, if ever, but I believe I am showing an excellent set of frequency relationships. Dont forget that this method of generating local oscillators gives an excellent way of getting onto P3D.

We also have to think about just how much spectrum space we really need. We have many hundreds of megahertz allocated to us but are we really going to use it? I doubt it. Consider the Amateur population and the ratio of Amateurs to non Amateurs. Here in VK there are 18,000 licenced Amateurs in a population of 17 million, therefore a loose ratio of approximately 1 : 1,000. I would expect about the same for most other developed countries. Not all amateurs are interested in the quiet higher frequencies. They really are literally "line of sight" and long distance contacts are a rarity, and few people have the patience to operate these bands. However, by having this bandplan, it will be possible to operate terrestrial and satellites with relative ease, and all from one 70 cm set.

Please study the diagrams, and, if possible, obtain a copy of the article that I wrote last year. It has many concepts concerning how to get onto the microwave bands. The concept I am espousing now still revolves around having a 100 MHz crystal as a master reference oscillator in the shack, and it can either be phase locked to some external source, like PAL TV line frequency or something like the OMEGA transmissions or a local AM broadcast station if one can be found to be precise enough, or it can be locked to a satellite beacon via FM AFC loops.

You can see that from the 100 MHz crystal there is a multitude of other local oscillators that can be derived. The important thing is that 430 to 440 MHz can be used to receive and transmit on every band from 2 to 81 GHz and that the six metre band may be used as a receiving IF n two of these bands, 5 and 10 GHz. It is important for satellite downlinks to keep transmissions away from where we want to receive, as satellite reception is inherently weak signal work. I realise that the six metre band is very restricted or non existent in Europe, but the concept is only to receive downlink signals. There is no requirement to transmit, and in any case, the downlinks are 50 MHz wide, so other arrangements will have to be made once the first 4 MHz is filled up.

BANDPLAN PROPOSAL

I chose 81.6 GHz instead of 81.0 GHz because it will have a common first IF with the 24 GHz band, thus eliminating the necessity of another IF. However, anyone wanting to operate 81.0 GHz can use 4.230 to 4.240 GHz for a first IF and derive the 3.800 GHz LO by mixing 800 MHz and 1100 MHz to form 100 MHz and then doubling it, but I feel it is better to have the least amount of gear necessary.

The 47 GHz band already exists as a primary allocation, although those who are capable of operating there use 47.040 GHz as the call channel. It should not be too difficult to change to 47.0321 GHz.

The 24 GHz band already exists, with a primary allocation from 24.000 to 24.050 GHz, however it seems that the few people who are able to operate on this band still cling to the old bandplan favourite of 24.192 GHz. This is risky business as we could lose the primary allocation if it is not used.

I propose the 10 GHz downlink remain as is 10.450 to 10.500 GHz and be divided into 10.450 to 10.454 narrow band, and 10.454 to 10.500 GHz wide band, with a dedicated wide band data frequency at 10.470 GHz and a second wideband alloction at 10.490 GHz. This way, 10.450 to 10.454 GHz will IF out at 50 to 54 MHz and 10.470 GHz will IF out at 70 MHz which just happens to be an international standard IF frequency for wideband signals like TV and data. The frequency 10.470 GHz is ideally suited to downlinking a 2 megabit high speed data channel transmitting various forms of stored packet data and stored digitized voice transmitted asynchronously from lower frequencies like 70 cm and 23 cm. It does not have to be 28 MHz wide, though, 2mb data can be transmitted easily in 7 MHz bandwidth.

I propose that a new 10 GHz band be located at 10.030 to 10.070 GHz, and that it be divided into 10.030 to 10.040 GHz narrow band for both terrestrial and satellite uplinking and 10.040 to 10.070 GHz for wide band uplining, with a dedicated FM ASTV uplink channel at 10.055 GHz (bandwidth 28 MHz with 1 MHz guard bands).

The ASTV frequency 10.055 GHz should ideally reappear at 5.670 GHz.
The 5 GHz band has already been brilliantly set up with two separate satellite bands, 5.650 to 5.670 GHz uplink and 5.830 to 5.850 GHz downlink. It was when I realised that 5.830 GHz could be translated directly to 430 MHz using 5.400 GHz as a local oscillator derived from the 54th harmonic of 100 MHz that I started to think seriously about all the other possibilities for local oscillators in other bands.

However, I suggest that part of the current satellite downlink allocation from 5.830 to 5.840 GHz become a terrestrial and satellite uplink band and that the existing uplink of 5.650 to 5.670 GHz be expanded to 5.700 GHz and be made into a satellite downlink only. If this is done, then we have the two bands 10.450 to 10.500 GHz and 5.650 to 5.700 GHz downconverting to 850 to 900 MHz then seond converting to 50 to 100 MHz. See what I am getting at? Use the first 4 MHz as a narrow band downlink and it will fall into the existing six metre band. Use 70 MHz as a standard IF for wideband TV or data transmissions. The idea is to use these bands for receiving only.

I STILL MAINTAIN THAT THE 5 GHZ BAND IS THE OPTIMUM BAND FOR AMATEUR SATELLITE OPERATION, AND EVERY EFFORT SHOULD BE MADE TO OBTAINING PRIMARY STATUS WORLDWIDE FOR THIS BAND.

Find a copy of the article I wrote last year and read the reasons.

The current 5 GHz Amateur downlink is beside the commercial uplink allocation which starts at 5.850 GHz. With the existing band plan, it is virtually impossible to expect us to get a 5 GHz "hitch hiker" downlink module on a commercial geostationary satellite because of the interference it would caue. However, if the bands are reversed, it is far more likely we may get a receiver onto a commercial satellite.

This is highly desireable. Geostationary satellites have no doppler shift.

At 3 GHz I propose the band 3.430 to 3.440 GHz. I have never seen Region 1 or 2 band plans, but I understand that 3 GHz is heavily used commercially in Europe, so I doubt that a wideband allocation would be granted for this band. It is definitely worth trying to get a narrow band satellite allocation here, from 3.435 to 3.438 GHz, as it would be an alternate band if 2.4 GHz was lost.

At 2 GHz I propose the band 2.430 to 2.440 GHz be made a terrestrial and satellite downlink band. Here in VK we have lost the band 2.300 to 2.400 GHz to the Pay TV interests, and we and everyone else need a new weak signal band. (I wonder how far out of band the little harmonic chirps are going to go.) The frequency 2.450 GHz is the frequency that most microwave ovens operate on and as there are enormous numbers of them in use, it is inevitable that we will suffer interference from them and there is not much we can do about it.
OTHER FACTORS TO CONSIDER

One of the concepts in using these frequencies is that the transmitter and receiver virtually have to be at the antenna. It is unrealistic to run coax, heliax or waveguide at these frequencies due to signal loss, cost and complexity. I suggest that the 100 MHz crystal reference oscillator be kept in the shack in its own little heated box and a coax goes up to the multiplier behind the antenna and that feeds the up and down converters, so that essentially 100 MHz goes up to the antenna and 70 cms goes up and down to all seven bands and six metres or really 50 to 100 MHz comes down when

operating on 5 or 10 GHz satellite receive only.

The existing S band downlink usage is adjacent to 2.4 Ghz but it does not fit in
to the concept I have described. The concept of uplinking to 1260 MHz and
downlinking on 2.4 GHz known as Mode LS is an excellent one, and will be one
of the workhorse bands for a long time to come. I hope that future AMSAT
designers will consider using a 2.435 to 2.438 GHz downlink as the companion
to an L band uplink. At this stage, it is relatively easy to produce real
power at 1200 MHz with valve or solid state modules at realistic cost.
Not so at 5 or 10 GHz, where the available power fets are still low output,
are VERY expensive and require lots of DC because they operate Class A.
In time, like everything else, costs will come down and power will go up.
The way to obtain gain at the higher frequencies is with dish size.

In recent years, manufacturers like Yaesu and Kenwood have produced equipment
which covers four VHF UHF bands, namely 50 144 432 1296 MHz. Ths is an
excellent concept, and my ideas that I have written about will fall into
using these multi band radios. I really believe that 1296 MHz is the highest
frequency to have in the shack. Above that, it has got to be remote up and
down converters at the antennas.

Because the master frequency is 100 MHz, all the harmonics used as Local
Oscillators will be multiples of this, and this is one of the main advantages
of my proposed bandplan. All modern commercial equipment has a digital
display, and if these frequencies are transverted to higher bands, then there
are no mental gymnastics in trying to work out what frequency we are operating on.

The Americans have thought up the "no tune boards" which are a brilliant
concept. I am certain that they will produce four boards to multiply the
100 MHz signal to 800 900 1000 and 1100 MHz, and other boards to produce the
higher local oscillators and mixers and converters. The antenna concept I
would recommend is to have 5 and 10 GHz together on one 1.2 metre dish with
the 800 and 900 MHz boards and the up and down converters behind it and 70 cms
going up and down, and 50 to 100 MHz coming down.

The other mast would have antennas for 2 mtrs 70, 23, 13, and 9 cms.
The 800 MHz signal is not required on 2 or 3 GHz.
The 900 MHz signal is only used to translate 5.830 GHz to 70 cms.
The 1000 MHz signal is only used to derive LOs for 13 and 9 cms.
The 1100 MHz signal is only used for 24, 47 and 81 GHz.

In another thirty years or so, the bands 24, 47 and 81 GHz will become popular.
Then we would have these three bands on the same dish. Dish surface accuracy
will be the main problem here, it will be in the order of 1 mm or less!
Another problem will be LO noise caused by the multiplying of the 100 MHz.
Anyone concidering going this high may want to injection lock a DRO
(Dielectric Resonator Oscillator) at 4800 MHz and then multiply from there.
This should be a far quieter LO. I would expect that DRO pucks used in C Band
TVRO applications might run this low, they normally run around 5.0 to 5.4 GHz.

It is obvious that 70 and 23 cms must also become Primary Allocations.

Please consider this proposal. If you can see any fundamental errors or
any conflicts at all, then PLEASE PLEASE PLEASE let me kow at

VK4FXL @ VK4CXX.BNE.QLD.AUS.OC

Please photo copy this article and distribute it to your fellow amateurs,
discuss it at club meetings, reprint it in any relavent magazine or newspaper
and lobby your nations governing bodies.

It is up to YOU to populate these bands or they will be lost. The suggestions
I have proposed are, I believe, excellent ways of getting on the microwave
bands with the minimum of equipment and therefore COST. It is better to have
some narrow but usefull Primary allocations than to have the secondary
allocation status we currently have. As I said before, we here in VK have
just lost 2.3 to 2.4 GHz to the Pay TV interrests, and the embarrasing thing
is that the frequency of one of the TV Channels is 2304.0

The company that I work for produce MDS Pay TV transmitters and I had a verb
joust with the engineer who designed them about their being in the Amateur
band, and his immediate and very loud response was " You've only got
yourselves to blame if you didn't lobby hard enough! "

USE IT OR LOSE IT.

Graeme Wilson VK4FXL.

==========

73 de Jack

130. Re: [NETSIG:146] Re: Corrupted N*tROM nodes list

From: tmoulton@ram.net
Date: Fri, 28 Oct 94 07:42:11 EDT
To: netsig@tapr.org
Message-ID: <05616.15021573@RAMail>
Rendered body type: text/plain

>From: netsig@tapr.org
>Date: Thu, 27 Oct 94 16:48 CDT
>Reply-To: netsig@tapr.org
>Sender: netsig@tapr.org
>To: netsig@tapr.org
>Subject: [NETSIG:146] Re: Corrupted N*tROM nodes list
>
>> >
>> >It sounds like NetRom doesn't have any error checking on the RS-232 link.
>
>> >
>> >Is this true?
>> >
>>
>> Does anyone know the answer to this?
>
>Most RS-232 serial links do not have error checking. This is
>   required if the link is to send 8 bit binary data. Back in
>   the good old days most serial links would run ASCII with one
>   of the 8 bits used as parity. In our terminal programs, we
>   normally run 8N which means 8 bits no parity, but if we ran
>   7O or 7E (7 bits odd parity or 7 bits even parity) there would
>   be some error checking. The real problem is that what would
>   the software do if there was an error. Most systems do
>   nothing so why bother. If you want to send 8 bit binary data
>   or use the full ISO character set (such as Latin 1) so that
>   non english text can be represented, you can not use parity.
>
>Stephen(Steve) Schwarm, W3EVE
>Principal
>The MITRE Corp.
>202 Burlington Rd MS B155
>Bedford, MA 01730
>(617)271-4600
>FAX: (617)271-4686
>Schwarm@mitre.org
>Packet: W3EVE @ K1UGM.#EMA.MA.USA.NA
>

If you are talking about a connection for a Terminal, I agree that there usually isn't error detection/correction. But the question relates to the serial port of a Networking device that will handle data for many people at the same time.

If there is an error on the radio channel it will retransmit it to get it there correctly. The has got to be a protocol around the packets that go on the serial port to the other nodes, so one would think that it is error checked.

131. Re: [NETSIG:149] Users and 9600 baud

From: tmoulton@ram.net
Date: Fri, 28 Oct 94 17:26:09 EDT
To: netsig@tapr.org
Message-ID: <05617.15021573@RAMail>
Rendered body type: text/plain

Here in NJ we have all out (ROSE) backbones at 4800 and 9600. This lets the users fight it out to get into the system, but then the backbone is very quick...

besides a backbone picks up traffic all along the way and passes it longer distances... a few 1200 baud feeds can help fill up a 9600 pipe...

ya know how many new packet users talk to their friend while on the phone...

73, tom w2vy

132. Re: Users and 9600 baud

From: bruce@pixar.com (Bruce Perens)
Date: Fri, 28 Oct 94 14:42 PDT
To: LARSEN KARL AMSRL-SL-EC 505-678-3145 <klarsen@arl.army.mil>

Cc: tcp-group@ucsd.edu, netsig@tapr.org
Message-ID: <m0r0z4R-00063NC@mongo.pixar.com>
Rendered body type: text/plain

[I'm re-directing this thread to NETSIG@TAPR.ORG . Please do not follow-up]
[to TCP-GROUP@UCSD.EDU, there is no reason to use _two_ lists. - Bruce]

Karl Larsen said:

> Roy said that while information theory and experiance tells us to run
> 1200 baud on the long runs but make the local links much faster,
> like 9600 baud.

You must mean user-to-BBS connections, as 1200 wouldn't be practical for
a backbone.

> The problem is that the ordinary ham isn't capable of making 9600
> baud work.

I made 9600 work with only a voltmeter. I used off-the-shelf radios
and TNCs (TEKK and Kantronics), which makes a big difference. I used a
$17 Radio Shack TV antenna and a 4:1 coaxial balun. I wouldn't expect a
new ham to convert a Micor. I set the voltage to the input of my TEKK to
the one I was told would make it deviate about 3 KHz. It worked. Big deal.

> But they are not Engineers and don't have an oscilliscope to
> display eye waveforms or a Service Monitor to set frequency
> and transmit deviation. So they are not able for reasons of
> training and equipment to get 9600 baud systems working.

Kantronics says to measure the voltage at the BER test point of their
TNC, as it is more accurate than eye patterns. If I had a TAPR modem
I'd have no choice but to look at eye patterns.

> So lets be reasonable and admit that the new No Code Ham is not
> going to have a scope, or freq. meter or any of that stuff.

OK. They don't need them.
Also, you are completely discounting the fact that the world is full
of Elmers. I don't have a service monitor (though I admit to lusting
for one) but when I really need one, I can drive over to a buddy and
use his.

> We must be honest with them and say NO! Do NOT buy a 9600 baud modem!

I wouldn't suggest any new ham buy the TAPR modem, but there is good
off-the-shelf equipment now.

The problem with running a LAN at 9600 with these two-watt radios
is that you need a bit-regenerating repeater to eliminate the
hidden-transmitter problems so that everyone can use directional
antennas pointing at the repeater, everybody can hear each other,
etc. So let's build repeaters to make it easier for the naive user
to join a LAN.

Karl, a while back you were arguing why it was necessary for us to
build software for people who could not afford a 486. Now you have a
486 and I don't hear that argument any longer. Could it be that you're
going to drag your feet on 9600 for another two years and then join
that bandwagon too?

Thanks

Bruce AB6YM

133. Eroding bands

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Fri, 28 Oct 1994 16:18:04 -0600 (MDT)
To: Sig Networking <netsig@tapr.org>
Message-ID: <Pine.SUN.3.90.941028161220.2115A-100000@kazak>
Rendered body type: text/plain

As the mail on this sig has identified, the fcc is selling off
some spectrum. Since we CO_USE every Hz of our spectrum above 148 MHz,
this is a chance for improvement, not doom. I say lets BUY some spectrum
for Ham Radio! We will then be the primary users and can use it as we see
fit. This is where the ARRL can do some real good.

I will watch and may try to buy some spectrum myself. I would
like to own some in the 43 GHz region...no, I won't say why.

-karl

134. Re: [NETSIG:154] Eroding bands

From: Tim Baggett <tim@nmsu.edu>
Date: Fri, 28 Oct 1994 17:21:33 -0600 (MDT)
To: netsig@tapr.org
Message-ID: <Pine.3.87.9410281733.A491-0100000@wilma>
Rendered body type: text/plain

On Fri, 28 Oct 1994, Klarsen wrote:

>
>   As the mail on this sig has identified, the fcc is selling off
> some spectrum. Since we CO_USE every Hz of our spectrum above 148 MHz,
> this is a chance for improvement, not doom. I say lets BUY some spectrum
> for Ham Radio! We will then be the primary users and can use it as we see
> fit. This is where the ARRL can do some real good.

I am by far not an expert on this subject, but ....

during my interview with Ericsson Radio, they mentioned the FCC selling
off spectrum. I believe the auction data was set for December 5. Anyhow,
they mentioned that demand for RF spectrum is so great that several
corporations are having to group together in order to purchase the
frequencies they want.

I don't think my student loans can cover even a few KHz for my HT to
operate on :-)

73
Tim

Tim@nmsu.edu

135. Re: [NETSIG:154] Eroding bands

From: bruce@pixar.com (Bruce Perens)
Date: Fri, 28 Oct 94 16:43 PDT
To: netsig@tapr.org, netsig@tapr.org
Message-ID: <m0r10xV-00063kC@mongo.pixar.com>
Rendered body type: text/plain

Karl, the application fee for bidding last time was 175 Million dollars.
That's just the application fee. If you have that much money, you can
afford a 9600 TNC and a Pentium.

        Bruce :-)

136. Re: [NETSIG:145] NEDA Question....

From: dwolf@tcet.unt.edu (Dave Wolf)
Date: Fri, 28 Oct 94 18:51:18 CDT
To: netsig@tapr.org
Message-ID: <9410282351.AA102305@tcet.unt.edu>
Rendered body type: text/plain

>
> I want to join NEDA, however I can not get any response from
> them by mail. Does anyone have a good address or fone number
> or even an E-Mail account number?
>
> I guess I procrastinated too long, and lost my chance since
> Dayton!
>
>
> Tim KA5RYF/0
>
NEDA
P.O. Box 563
Manchester NH 03105

Just received a mailing from them today, so trust this address is as
fresh as it can be! ...Dave WO5H

137. Re: [NETSIG:149] Users and 9600 baud

From: ron@chaos.eng.wayne.edu (Ron Atkinson)
Date: Sat, 29 Oct 1994 00:27:29 -0400 (EDT)
To: netsig@tapr.org

Message-ID: <9410290427.AA00567@chaos.NIS.chaos>
Rendered body type: text/plain

My mailer said LARSEN KARL AMSRL-SL-EC 505-678-3145 said this:
>
>   The problem is that the ordinary ham isn't capable of making 9600
> baud work. The 2 stations in El Paso, TX which are run not as nodes but

[stuff deleted]

>   So lets be reasonable and admit that the new No Code Ham is not

[more stuff deleted]

Well lets see, I have 3 MFJ tnc's here all with 9600 baud modems. I bought one tnc and immediately opened it up and installed a Paccomm modem without ever hooking up the tnc. All 3 work fine with no O-scope or any equipemnt whatsoever to test it out. After they were hooked up to radios (I have 3 TEKK rigs here for testing and also a Kenwood TM-731A dual-band mobile modified on both VHF and UHF for 9600) and all have worked great the first time. Afterwards I hooked up a scope and found them to be right on.   I do require about an S3 signal though to maintain a totally reliable 9600 link. My Kenwood will decode 9600 almost error free with an S1 signal on it's scale (who knows what it really is though). Setting up a 9600 tnc is pretty much idiot proof and anybody that can pass a ham test SHOULD be knowledgeable to do this. If they just memorized the questions and answers in the back of the study guide and never learned any of the theory, then my attitude is that it's their problem. I learned the theory about 16 years ago and know people that learn it know. Too many people just memorize Q&A and then start whining that they don't understand something as simple as installing a 9600 modem in a tnc. I can put on in and have it on the air within a half hour to an hour.   With new rigs coming out that are supposed to be 9600 baud ready, and tnc's out with 9600 modems in them,   if they can't get that going then it's more likely 'operator headspace'.

There are lots of 9600 baud packet folks around here that are not at all technically inclined. They just bought a DRSI 9600 setup (DRSI TNC and Alinco radio) and they took it out of the box, plugged it in, and it worked immediately and within spec and proper levels right out of the box. Anybody and everybody can do 9600. They should be more knowledgeable than to try to use a lousy HT on packet anyways. If they ask why then tell them to read the theory that they are required to know to get their license.

--

Ron N8FOW

AMPRnet : n8fow@n8fow.ampr.org
Internet : ron@chaos.eng.wayne.edu
           aa011@detroit.freenet.org

138. Re: [NETSIG:153] Re: Users and 9600 baud

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Sat, 29 Oct 1994 02:26:39 -0600 (MDT)
To: netsig@tapr.org
Message-ID: <Pine.SUN.3.90.941029021041.8065A-100000@kazak>
Rendered body type: text/plain

On Fri, 28 Oct 1994, Bruce Perens wrote:

> [I'm re-directing this thread to NETSIG@TAPR.ORG . Please do not follow-up]
> [to TCP-GROUP@UCSD.EDU, there is no reason to use _two_ lists. - Bruce]

        Not everyone gets both lists Bruce.....

>
> Karl Larsen said:
>
> I made 9600 work with only a voltmeter. I used off-the-shelf radios
> and TNCs (TEKK and Kantronics), which makes a big difference. I used a
> $17 Radio Shack TV antenna and a 4:1 coaxial balun. I wouldn't expect a
> new ham to convert a Micor. I set the voltage to the input of my TEKK to
> the one I was told would make it deviate about 3 KHz. It worked. Big deal.

        I gather your a shoe salesman Bruce? You have no experiance with
radios or packet?

>
> Karl, a while back you were arguing why it was necessary for us to
> build software for people who could not afford a 486. Now you have a
> 486 and I don't hear that argument any longer. Could it be that you're

        Bruce you are confused very badly. I have had a 486 for 4 years
and that had nothing to do with that discussion. I was simply observing
that most hams do not have 486 computers.

> going to drag your feet on 9600 for another two years and then join
> that bandwagon too?

        You are on a witch hunt Bruce. I and Roy were talking about OUR
experiances with 9600 baud. I have a 9600 baud node sitting on the table
next to the computer and it works just fine. I had to retune it last
weekend because the Tekk radio had drifted off frequency.

        Tell us how you got your user 9600 baud system set up. Did it
just WORK the first time? We have had the experiance that 9600 baud
systems don't work the first time most of the time.

        Bruce you are making fun of people that are not as experianced as
you are. That is not a good thing to do.

>   Thanks
>
>   Bruce AB6YM
>

        73, de karl k5di

139. Re: [NETSIG:155] Re: Eroding bands

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Sat, 29 Oct 1994 07:41:32 -0600 (MDT)
To: netsig@tapr.org
Message-ID: <Pine.SUN.3.90.941029074023.9366A-100000@kazak>
Rendered body type: text/plain

On Fri, 28 Oct 1994, Tim Baggett wrote:

> On Fri, 28 Oct 1994, Klarsen wrote:
>
> >
> >   As the mail on this sig has identified, the fcc is selling off
> > some spectrum. Since we CO_USE every Hz of our spectrum above 148 MHz,
> > this is a chance for improvement, not doom. I say lets BUY some spectrum
> > for Ham Radio! We will then be the primary users and can use it as we see
> > fit. This is where the ARRL can do some real good.
> >
>
> I am by far not an expert on this subject, but ....
>
> during my interview with Ericsson Radio, they mentioned the FCC selling
> off spectrum. I believe the auction data was set for December 5. Anyhow,
> they mentioned that demand for RF spectrum is so great that several
> corporations are having to group together in order to purchase the
> frequencies they want.
>
> I don't think my student loans can cover even a few KHz for my HT to
> operate on :-)
>
> 73
> Tim
>
> Tim@nmsu.edu
>
>

        I don't know, some of those student loans look large to me...

-karl k5di

140. Re: [NETSIG:158] Re: Users and 9600 baud

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Sat, 29 Oct 1994 08:35:33 -0600 (MDT)
To: netsig@tapr.org

Message-ID: <Pine.SUN.3.90.941029081459.9366D-100000@kazak>
Rendered body type: text/plain

Based upon the comments I got from the guys on this subject my
Doberman buddy Daisy should be able to buy $500 worth of gear and get on
9600 baud no sweat.

All you need is a screw driver. And all you need that for is to
open the box...

There may be today Kantronics or other hardeware you can buy that
just works. It has been tuned up at the plant and sent out. But it's my
experiance with Paccom and tapr modems that the hard part is:

1. Getting the modem-to-radio cables made and levels set properly.

2. Getting the radio on the right frequency(s). The hill top
nodes may NOT be on the published frequency. Many 1200 baud nodes are 500
to 1000 Hz off frequency and work fine. But that far off at 9600 baud
will seriously degrade performance.

So if there is someone that thinks we all can just put 9600 baud
modems into tnc's and wire them up and go are deluded. I have worked with
4 nodes using both Tekk and Mitrex radios. The tnc's are tiny-2 from
paccomm with the g3ruh modem from paccomm. They are all working just fine
now...but it takes a lot of tweeking to get them working right. I have
one connected to my g8bpq switch. That tells me the re-try rate. I was
running 250% retries before I tuned my receiver frequency 200 Hz closer
to the frequency being used by the other node. Now it is running less
than 50%.

I plan to get it down to 0% but that takes a lot of work. I think
today I will skip it. What do you think a non-technical ham will do?

-karl

141. Re: [NETSIG:153] Re: Users and 9600 baud

From: "William L. Barnes" <wlbarn@planetx.bloomu.edu>
Date: Sat, 29 Oct 1994 12:55:28 -0400 (EDT)
To: netsig@tapr.org
Cc: netsig@tapr.org
Message-ID: <Pine.SUN.3.90.941029125221.6967A-100000@planetx>
Rendered body type: text/plain

On Fri, 28 Oct 1994, Bruce Perens wrote:

> and TNCs (TEKK and Kantronics), which makes a big difference. I used a
> $17 Radio Shack TV antenna and a 4:1 coaxial balun. I wouldn't expect a

Could you tell me a little bit about how you got a tv antenna to work on
440? I could use a beam here, and that sounds like a cheap alternative...

Plus I think it might be a good thing for the list here too... Did you
do anything special to the antenna?
Thanks!

> Also, you are completely discounting the fact that the world is full
> of Elmers. I don't have a service monitor (though I admit to lusting

That's true too... I Elmer a few people, and a few people are Elmers to
me... It helps alot when you run into problems to ask someone who has
fixed the same problem before...

73, de Bill, N3JIX
```
**********************************************************************
* Bill Barnes, N3JIX                   * Bloomsburg Unviersity       *
* Internet:  wlbarn@planetx.bloomu.edu  * Bloomsburg, Pa              *
* Packet  :  n3jix@n3jix.#epa.pa.usa.noam                            *
**********************************************************************
```

142. Re: [NETSIG:154] Eroding bands

From: "William L. Barnes" <wlbarn@planetx.bloomu.edu>
Date: Sat, 29 Oct 1994 12:57:11 -0400 (EDT)
To: netsig@tapr.org
Cc: netsig@tapr.org
Message-ID: <Pine.SUN.3.90.941029125612.6967B-100000@planetx>
Rendered body type: text/plain

On Fri, 28 Oct 1994, Klarsen wrote:

> this is a chance for improvement, not doom. I say lets BUY some spectrum
> for Ham Radio! We will then be the primary users and can use it as we see
> fit. This is where the ARRL can do some real good.

Good idea Karl, but I have reservations about the ARRL buying anything...

I'm a member, but I still don't really like the idea of the ARRL buying
spectrum for some reason...

73, de Bill, N3JIX
```
*****************************************************************
* Bill Barnes, N3JIX                   * Bloomsburg Unviersity  *
* Internet:  wlbarn@planetx.bloomu.edu  * Bloomsburg, Pa         *
* Packet  :  n3jix@n3jix.#epa.pa.usa.noam                        *
*****************************************************************
```

143. Re: [NETSIG:161] Re: Users and 9600 baud

From: Tim Baggett <tim@nmsu.edu>
Date: Sat, 29 Oct 1994 10:57:44 -0600 (MDT)
To: netsig@tapr.org
Message-ID: <Pine.3.87.9410291044.A7210-0100000@wilma>
Rendered body type: text/plain

On Sat, 29 Oct 1994, Klarsen wrote:

>   So if there is someone that thinks we all can just put 9600 baud
> modems into tnc's and wire them up and go are deluded. I have worked with
> 4 nodes using both Tekk and Mitrex radios. The tnc's are tiny-2 from
> paccomm with the g3ruh modem from paccomm. They are all working just fine
> now...but it takes a lot of tweeking to get them working right. I have
> one connected to my g8bpq switch. That tells me the re-try rate. I was
> running 250% retries before I tuned my receiver frequency 200 Hz closer
> to the frequency being used by the other node. Now it is running less
> than 50%.

Yeah, but then you tell the rest of us on the packet channel our nodes
aren't working. Instead of chasing the mountain top TEKKS around the
band, I say the hams should stay on the published frequency. Heck if we
chased a TEKK up and down the bands we'd be all over the place. I
wouldn't be surprised if the reason our RF problem is soo bad is because
you and the mountain top node are off frequency. I don't have time to
chase everyone all different directions around the band. I had enough of
that when I operated my Hallicrafters (ole drifty!) on 20 meters RTTY :-)

>   I plan to get it down to 0% but that takes a lot of work. I think
> today I will skip it. What do you think a non-technical ham will do?

Get it on 445.1 MHz, 3.4 KHz deviation, with a good eye pattern going
into the transmitter and leave it alone.

73
Tim, AA5DF

Tim@NMSU.EDU

144. Re: [NETSIG:159] Re: Users and 9600 baud

From: bruce@pixar.com (Bruce Perens)
Date: Sat, 29 Oct 94 11:37 PDT
To: netsig@tapr.org, netsig@tapr.org
Message-ID: <m0r1Ieo-00063qC@mongo.pixar.com>
Rendered body type: text/plain

Karl,

I'm not a shoe salesman. Did you see the restored version of "Snow
White"? I wrote some of the software used to clean up every frame of
that film. However, I don't know _all_ that much about RF, so I figure
I'm representative of little-experienced operators in that area. I'm
nearly innumerate by the standard of people who work at Pixar - my
software doesn't do much more than multiply and add. I do have a good
grasp of systems programming and networking protocols. I don't own the
equipment I'd need to work on RF, even if I understood it.

So, given that background, what I did was take two radios and two
TNCs in the same room, set the TNCs up to provide about the right
voltage (not using a RMS voltmeter, either) to the radio inputs,
and tweaked the input level pots a bit while watching the voltage

on the BER outputs of the TNCs. No big deal.

After that, I went to Radio Shack and bought one of their UHF TV
receiving antennas because it "looked right" for 433 MHz from what
I'd read about antennas. I cut a 4:1 coaxial balun out of coaxial
cable and used it to match the antenna. It worked. No big deal.

However, can I use that like a 1200 Baud 2 Meter TNC in a LAN? Not
with two watts. I could if there were a bit-regenerating repeater.
So I'd suggest higher power if you don't have a repeater at the center
of your LAN, and even that won't work as well as it would with the
repeater in place.

The appliance operators will probably wait until we've done the
pioneering to them. I would suggest to beginners who aren't appliance
operators that they get 9600 equipment, so that they can have the pride
and experience of being pioneers and working out the problems for those
who will come after them.

        Bruce

145. Radio Shack TV antenna on 440

From: bruce@pixar.com (Bruce Perens)
Date: Sat, 29 Oct 94 11:44 PDT
To: netsig@tapr.org
Message-ID: <m0r1IlN-00063lC@mongo.pixar.com>
Rendered body type: text/plain

William Barnes asked me to say something about the Radio Shack TV antenna
on 440. The antenna is their "75 mile" UHF-only antenna, and it cost $17.
It's a corner-reflector with directors. I don't know if the directors
are working but the corner reflector works. I cut a 4:1 coaxial balun
from instructions in the ARRL Antenna Book. That's all I'm doing right
now and it seems to work well. I didn't trim elements and I have somewhat
of a mis-match. Someone with the right tools could trim the elements,
perhaps lengthen the directors, and get a few more dB out of it. For $17
it's cheap fun for an afternoon.

        Bruce

146. Re: [NETSIG:165] Re: Users and 9600 baud

From: wx3k@w2air.ampr.org (John Zantek)
Date: Sat, 29 Oct 94 12:24:40 -0700
To: netsig@tapr.org
Message-ID: <9410291924.AA16420@iserver.tcpet.uscg.mil>
Rendered body type: text/plain

> However, I don't know _all_ that much about RF, so I figure
>I'm representative of little-experienced operators in that area.

I find it interesting that you can count the 9600 baud users
in all of Northern California on less than both hands. What's
that say about the level of experience?

--
```
   *--------------------*----------------------------------------*
   |  John Zantek WX3K  | Internet: jzantek@tcpet.uscg.mil       |
   |    [44.4.40.104]   |   Packet: WX3K@WX3K.#NOCAL.CA.USA.NOAM |
   |  Data 707 765 7016 |  Amprnet: wx3k@w2air.ampr.org          |
   *--------------------*----------------------------------------*
```

147. Re: [NETSIG:164] Re: Users and 9600 baud

From: ron@chaos.eng.wayne.edu (Ron Atkinson)
Date: Sat, 29 Oct 1994 16:06:03 -0400 (EDT)
To: netsig@tapr.org
Message-ID: <9410292006.AA01928@chaos.NIS.chaos>
Rendered body type: text/plain

On Sat, 29 Oct 1994, Klarsen wrote:

>   So if there is someone that thinks we all can just put 9600 baud
> modems into tnc's and wire them up and go are deluded. I have worked with

Yup I do. You want proof, come to Detroit. We even have people here that
wanted to get into packet and their very first packet system was a 9600 baud
one. They have never owned 1200 baud and have no reason to. They are also
not into the technical scene too. They open the box, plug it in, and it
works the first time. You must have something wrong if you can't get it to

work. I know that some radios need modifications, but newer ones don't.
A TEKK micro should work out of the box, but I had to make a few mods on
the 3 Minis here to get them to work. For new users, don't buy a radio that
requires mods, that's what most folks around here do. I'm one of the few
people in the area that 'built my own' 9600 setup.

9600 is user ready today and it has been. There isn't much need for an
arguement anymore about it since we have the proof right here in Detroit
and many other cities with first-time packet folks using it. Now 19200
may be a different story, how about that speed?

--

Ron N8FOW

AMPRnet : n8fow@n8fow.ampr.org
Internet : ron@chaos.eng.wayne.edu
           aa011@detroit.freenet.org

148. Re: [NETSIG:167] Re: Users and 9600 baud

From: bruce@pixar.com (Bruce Perens)
Date: Sat, 29 Oct 94 13:22 PDT
To: netsig@tapr.org
Message-ID: <m0r1KI4-00063mC@mongo.pixar.com>
Rendered body type: text/plain

From: wx3k@w2air.ampr.org (John Zantek)
> I find it interesting that you can count the 9600 baud users
> in all of Northern California on less than both hands.
> What's that say about the level of experience?

Probably that we're all rather inexperienced, so far. What are you
getting at?

I really like starting something new that I know nothing about and
seeing how far I can get with it. I was a ham back before college, but
I've only had this license for a few years now. I've been trying to
"blaze a trail" that others can follow into new territory for most hams
such as TCP/IP, 9600, and using Linux (an advanced operating system)
for ham radio. I didn't know anything about any of these subjects three
years ago. Now, I speak on the subjects at club meetings and ARRL
conferences. You don't need a PhD. to do that, and it helps get others
interested in pioneering. Besides everything else I'm doing I'm
starting my own side business to pay for more ham radio toys. I'm
learning a lot doing _that_, too. I started out knowing nothing about
it, and have been having a great time learning how to deal with
government, banks, etc.

        Bruce

149. Re: [NETSIG:154] Eroding bands

From: n3kfh@centrum.is (Don Dietz)
Date: Sun, 30 Oct 1994 01:06:45 +0000
To: netsig@tapr.org
Message-ID: <199410300143.BAA23067@plaza.centrum.is>
Rendered body type: text/plain

>
>   As the mail on this sig has identified, the fcc is selling off
>some spectrum. Since we CO_USE every Hz of our spectrum above 148 MHz,
>this is a chance for improvement, not doom. I say lets BUY some spectrum
>for Ham Radio! We will then be the primary users and can use it as we see
>fit. This is where the ARRL can do some real good.
>
>   I will watch and may try to buy some spectrum myself. I would
>like to own some in the 43 GHz region...no, I won't say why.
>
>-karl
>

Sounds like a nice dream Karl, but I doubt most hams or even the ARRL have the
founds to pull off something like this. Also, paying for any frequency band
would not only make the amateur service look commercial, it may even set a
precedence for this crazy Clinton administration to charge us for the rest
of the bands that we are already using (for free). I hope you can come up
with the cash for those too!   Besides, even AMSAT has trouble raising money
for new satellites, so what makes you think we can run out and pay for all
that spectrum?

Respectfully,

Don Dietz, N3KFH /TF8
Certified Electronics Technician,
   Communications Journeyman (ISCET) MD-250

Internet: n3kfh@centrum.is   Packet: n3kfh@tf3lj.isl.eu
          ddietz@rhi.hi.is   n3kfh@k4ry.#cenal.al.usa.noam

Coming to you direct from Keflavik, Iceland!

150. Re: [NETSIG:170] Re: Eroding bands

From: Greg Jones <gjones@tenet.edu>
Date: Sat, 29 Oct 1994 20:34:53 -0500 (CDT)
To: netsig@tapr.org
Message-ID: <199410300134.UAA13838@Kay-Abernathy.tenet.edu>
Rendered body type: text/plain

It is not a question of money. The question is -- can we somehow get the
FCC to set aside recreational parklands (i.e. Freq) for non-commercial users
(i.e. hams).

All we need is a small part of each band in order to allow us to have space
to play. We don't need the several billion dollars of band space we have
had use of for the last several decades.

Times a changing. We just need to make srue that we don't lose everything.

Cheers - greg

According to Don Dietz:
>
> >
> >   As the mail on this sig has identified, the fcc is selling off
> >some spectrum. Since we CO_USE every Hz of our spectrum above 148 MHz,
> >this is a chance for improvement, not doom. I say lets BUY some spectrum
> >for Ham Radio! We will then be the primary users and can use it as we see
> >fit. This is where the ARRL can do some real good.
> >
> >   I will watch and may try to buy some spectrum myself. I would
> >like to own some in the 43 GHz region...no, I won't say why.
> >
> >-karl
> >
>
> Sounds like a nice dream Karl, but I doubt most hams or even the ARRL have the
> founds to pull off something like this. Also, paying for any frequency band
> would not only make the amateur service look commercial, it may even set a
> precedence for this crazy Clinton administration to charge us for the rest
> of the bands that we are already using (for free). I hope you can come up
> with the cash for those too!   Besides, even AMSAT has trouble raising money
> for new satellites, so what makes you think we can run out and pay for all
> that spectrum?
>
> Respectfully,
>
> Don Dietz, N3KFH /TF8
> Certified Electronics Technician,
>   Communications Journeyman (ISCET) MD-250
>
> Internet: n3kfh@centrum.is   Packet: n3kfh@tf3lj.isl.eu
>   ddietz@rhi.hi.is   n3kfh@k4ry.#cenal.al.usa.noam
>
> Coming to you direct from Keflavik, Iceland!
>
>

151. Re: [NETSIG:146] Re: Corrupted N*tROM nodes list

From: rdonnell@eskimo.com (Bob Donnell)
Date: Sat, 29 Oct 1994 23:30:13 -0700 (PDT)
To: netsig@tapr.org
Message-ID: <199410300630.AA04112@eskimo.com>
Rendered body type: text/plain

>
> > >
> > >It sounds like NetRom doesn't have any error checking on the RS-232 link.
> > >
> > >Is this true?

> > >
> >
> > Does anyone know the answer to this?
>
> Most RS-232 serial links do not have error checking. This is
>   required if the link is to send 8 bit binary data. Back in
>   the good old days most serial links would run ASCII with one
>   of the 8 bits used as parity. In our terminal programs, we
>   normally run 8N which means 8 bits no parity, but if we ran
>   7O or 7E (7 bits odd parity or 7 bits even parity) there would
>   be some error checking. The real problem is that what would
>   the software do if there was an error. Most systems do
>   nothing so why bother. If you want to send 8 bit binary data
>   or use the full ISO character set (such as Latin 1) so that
>   non english text can be represented, you can not use parity.
>
> Stephen(Steve) Schwarm, W3EVE
> Principal
> The MITRE Corp.
> 202 Burlington Rd MS B155
> Bedford, MA 01730
> (617)271-4600
> FAX: (617)271-4686
> Schwarm@mitre.org
> Packet: W3EVE @ K1UGM.#EMA.MA.USA.NA
>
>

One of the extensions to KISS done by G8BPQ includes checksum errorchecking
on packets to/from the TNC. If this was added to TheNET as a configurable
option, it could help resolve the problem. Yes, I do recognize that
checksum error detection isn't terribly robust. It is quick tho.

Bob, KD7NM

| Bob Donnell, KD7NM   bob@ethanac.kd7nm.ampr.org   rdonnell@eskimo.com |
| Western Washington Amateur IP Address Coordinator   (206) 775-3651 |
---

152. Re: [NETSIG:166] Radio Shack TV antenna on 440

From: "William L. Barnes" <wlbarn@planetx.bloomu.edu>
Date: Sun, 30 Oct 1994 09:13:27 -0500 (EST)
To: netsig@tapr.org
Cc: netsig@tapr.org
Message-ID: <Pine.SUN.3.90.941030091137.3421A-100000@planetx>
Rendered body type: text/plain

On Sat, 29 Oct 1994, Bruce Perens wrote:

> are working but the corner reflector works. I cut a 4:1 coaxial balun
> from instructions in the ARRL Antenna Book. That's all I'm doing right
> now and it seems to work well. I didn't trim elements and I have somewhat

Sounds like something to try... I've been toying with the idea of going
from this 440 ground plane to a beam for the forwarding port...

I'll let you know if I get one to work... I think I have an extra UHF
corner reflector out in the barn...   Will check today, though...

Thanks.

73, de Bill, N3JIX

****
* Bill Barnes, N3JIX   * Bloomsburg Unviersity *
* Internet: wlbarn@planetx.bloomu.edu * Bloomsburg, Pa   *
* Packet : n3jix@n3jix.#epa.pa.usa.noam   *
****

153. Re: [NETSIG:163] Re: Eroding bands

From: tmoulton@ram.net
Date: Sun, 30 Oct 94 13:18:26 EST
To: netsig@tapr.org
Message-ID: <05619.15021573@RAMail>
Rendered body type: text/plain

>From: netsig@tapr.org
>Date: Sat, 29 Oct 94 12:06 CDT
>Reply-To: netsig@tapr.org

>Sender: netsig@tapr.org
>To: netsig@tapr.org
>Subject: [NETSIG:163] Re: Eroding bands
>
>
>
>On Fri, 28 Oct 1994, Klarsen wrote:
>
>> this is a chance for improvement, not doom. I say lets BUY some spectrum
>> for Ham Radio! We will then be the primary users and can use it as we see
>
>> fit. This is where the ARRL can do some real good.
>
>Good idea Karl, but I have reservations about the ARRL buying anything...
>
>I'm a member, but I still don't really like the idea of the ARRL buying
>spectrum for some reason...
>
>73, de Bill, N3JIX
>***
>* Bill Barnes, N3JIX   * Bloomsburg Unviersity *
>* Internet: wlbarn@planetx.bloomu.edu * Bloomsburg, Pa   *
>* Packet : n3jix@n3jix.#epa.pa.usa.noam   *
>***
>
>
Would you rather that w5yi, kenwood or icom bought it?

hi hi

154. Re: [NETSIG:172] Re: Corrupted N*tROM nodes list

From: tmoulton@ram.net
Date: Sun, 30 Oct 94 13:27:37 EST
To: netsig@tapr.org
Message-ID: <05621.15021573@RAMail>
Rendered body type: text/plain

>From: netsig@tapr.org
>Date: Sun, 30 Oct 94 01:33 CDT
>Reply-To: netsig@tapr.org
>Sender: netsig@tapr.org
>To: netsig@tapr.org
>Subject: [NETSIG:172] Re: Corrupted N*tROM nodes list
>
>>
>> > >
>> > >It sounds like NetRom doesn't have any error checking on the RS-232 lin
>k.
>> > >
>> > >Is this true?
>> > >
>> >
>> > Does anyone know the answer to this?
>>
>> Most RS-232 serial links do not have error checking. This is
[deleted]
>> Stephen(Steve) Schwarm, W3EVE
>
>One of the extensions to KISS done by G8BPQ includes checksum errorchecking
[deleted]
>
>| Bob Donnell, KD7NM   bob@ethanac.kd7nm.ampr.org   rdonnell@eskimo.com |

DOESN'T ANYONE KNOW WHAT NetRom, TheNET and/or X1J Uses on the serial port?

I am begining to wonder if the answer is SO embarassing the everyone is
looking the other way!

155. Re: [NETSIG:173] Re: Radio Shack TV antenna on 440

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Sun, 30 Oct 1994 10:44:55 -0700 (MST)
To: netsig@tapr.org
Message-ID: <Pine.SUN.3.90.941030104213.21850A-100000@kazak>
Rendered body type: text/plain

On Sun, 30 Oct 1994, William L. Barnes wrote:

>

>
> On Sat, 29 Oct 1994, Bruce Perens wrote:
>
> > are working but the corner reflector works. I cut a 4:1 coaxial balun
> > from instructions in the ARRL Antenna Book. That's all I'm doing right
> > now and it seems to work well. I didn't trim elements and I have somewhat
>
> Sounds like something to try... I've been toying with the idea of going
> from this 440 ground plane to a beam for the forwarding port...
>
> I'll let you know if I get one to work... I think I have an extra UHF
> corner reflector out in the barn...   Will check today, though...
>
> Thanks.
>
> 73, de Bill, N3JIX
> **
> * Bill Barnes, N3JIX   * Bloomsburg Unviersity *
> * Internet: wlbarn@planetx.bloomu.edu * Bloomsburg, Pa   *
> * Packet : n3jix@n3jix.#epa.pa.usa.noam   *
> **
>
>
>
        William if the one in the barn has what looks like a bow-tie made
of aluminum as the antenna then the balan made from coax will match it
very well. It should cover the entire band and more, if you need that...hi

73, de karl k5di

156. Re: Corrupted N*tROM nodes list

From: wb9mjn@uugate.wa7slg.ampr.org
Date: Sun, 30 Oct 94 14:22:09 mdt
To: netsig@tapr.org
Message-ID: <23479@uugate.wa7slg.ampr.org>
Rendered body type: text/plain

Hi, NETROM uses a simple check sum on the serial port communications. I do
not remember how many bits it is. Apparently, its not robust enuf for ur sit-
uation.

  We ve never had the corrupted NETROM nodes problems here, with our nodes. But
we have seen these problems propagate in from time to time. So , i m not too
familiar with the cause. I like to think that s because we always put things
together with shielded cables. But, it may be that we are just lucky. We ve
seen problems with the NRS (netrom serial) not working at all, when the computer
that the TNC2 NRS node was connected to was so fast, the TNC2 dropped the re-
ply packets altogether.

73, Don wb9mjn%wb9mjn.ampr.org@wb9uus.bradley.edu

157. Re: [NETSIG:177] Re: Corrupted N*tROM nodes list

From: tmoulton@ram.net
Date: Sun, 30 Oct 94 18:28:04 EST
To: netsig@tapr.org
Message-ID: <05623.15021573@RAMail>
Rendered body type: text/plain

>From: netsig@tapr.org
>Date: Sun, 30 Oct 94 14:46 CST
>Reply-To: netsig@tapr.org
>Sender: netsig@tapr.org
>To: netsig@tapr.org
>Subject: [NETSIG:177] Re: Corrupted N*tROM nodes list
>
>
> Hi, NETROM uses a simple check sum on the serial port communications. I do
>
>not remember how many bits it is. Apparently, its not robust enuf for ur sit
>-
>uation.
>
> We ve never had the corrupted NETROM nodes problems here, with our nodes.
>But
>we have seen these problems propagate in from time to time. So , i m not too
>
>familiar with the cause. I like to think that s because we always put things
>
>together with shielded cables. But, it may be that we are just lucky. We ve

>seen problems with the NRS (netrom serial) not working at all, when the comp
>uter
>that the TNC2 NRS node was connected to was so fast, the TNC2 dropped the re
>-
>ply packets altogether.
>
>73, Don wb9mjn%wb9mjn.ampr.org@wb9uus.bradley.edu
>

Don,

THANK YOU FOR AN ANSWER!

It is just an 8 bit checksum. It therefore can detect single bit errors, but
not 2 bit errors. On the RF side AX.25 uses CRC-16 CCITT which is much more
robust.

In ROSE we use the CRC-16 on the serial port as well.

Thanks!

73, Tom, W2VY

158. NETROM

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Sun, 30 Oct 1994 15:56:02 -0700 (MST)
To: Sig Networking <netsig@tapr.org>
Message-ID: <Pine.SUN.3.90.941030154414.24738A-100000@kazak>
Rendered body type: text/plain

I see all the messages showing extreme knowledge on how netrom
works and how a node broadcast could get messed up. I am still trying to
sort out what netrom is. I have 3 different versions of it that I own and
work with. All three are different code!

        The X1J node CAB has NordLink version 1.5 of netrom on it. It is
loaded as just that and the tcp/ip router is added on top. The WONDERFUL
G8BPQ SWITCH has another code that works with netrom but IS different
from the X1J.

        My JNOS 110G has yet another version of netrom. Not the same as
the other 2 it runs fine.

        So which of the 3 versions are having the problem? I have never
in 8 years seen any blown nodes that persisted. The netrom routing system
tossed the odd ones out in a couple hours. They generally came from a ham
playing with his NOS. You have so much control over netrom in NOS that
it's easy to screw up. I have done it before too.

        Today I set my g8bpq switch to use maxframe=7 on the 9600 baud
port. It seems to be working fine. But more later on that...

-karl k5di

159. Re: [NETSIG:176] Re: Radio Shack TV antenna on 440

From: "William L. Barnes" <wlbarn@planetx.bloomu.edu>
Date: Mon, 31 Oct 1994 08:37:05 -0500 (EST)
To: netsig@tapr.org
Cc: netsig@tapr.org
Message-ID: <Pine.SUN.3.90.941031083608.1307A-100000@planetx>
Rendered body type: text/plain

On Sun, 30 Oct 1994, Klarsen wrote:

>   William if the one in the barn has what looks like a bow-tie made
> of aluminum as the antenna then the balan made from coax will match it
> very well. It should cover the entire band and more, if you need that...hi

Thanks for the info Karl... I dunno, I haven't gotten a chance to look
for it yet... It's been a busy weekend...

73, de Bill, N3JIX
```
*****************************************************************
* Bill Barnes, N3JIX                    * Bloomsburg Unviersity  *
* Internet:  wlbarn@planetx.bloomu.edu  * Bloomsburg, Pa         *
* Packet  :  n3jix@n3jix.#epa.pa.usa.noam                        *
*****************************************************************
```

160. Re: [NETSIG:179] NETROM

From: "William L. Barnes" <wlbarn@planetx.bloomu.edu>
Date: Mon, 31 Oct 1994 08:44:41 -0500 (EST)
To: netsig@tapr.org
Cc: netsig@tapr.org
Message-ID: <Pine.SUN.3.90.941031083939.1307B-100000@planetx>
Rendered body type: text/plain

On Sun, 30 Oct 1994, Klarsen wrote:

> Today I set my g8bpq switch to use maxframe=7 on the 9600 baud
> port. It seems to be working fine. But more later on that...

Hmmm... I have a small problem with speed on G8BPQ. IT works fine with
a direct ax25 connect, but when someone connects via netrom, it's slow,
very slow...

Any ideas?
73, de Bill, N3JIX

```
**********************************************************************
* Bill Barnes, N3JIX                    * Bloomsburg Unviersity      *
* Internet:  wlbarn@planetx.bloomu.edu  * Bloomsburg, Pa             *
* Packet  :  n3jix@n3jix.#epa.pa.usa.noam                            *
**********************************************************************
```

161. Re: [NETSIG:153] Re: Users and 9600 baud

From: crompton@nadc.nadc.navy.mil (D. Crompton)
Date: Mon, 31 Oct 94 10:17:02 -0500
To: netsig@tapr.org
Cc: crompton@nadc.nadc.navy.mil
Message-ID: <9410311517.AA11373@nadc.nadc.navy.mil>
Rendered body type: text/plain

Here in SE PA and Southern NJ we are in the process of putting on
9600 baud repeaters using the TAPR and TEKK products. It will be started
right from the beginning with users encouraged to use low power (2-5 watts)
and high gain beams pointed at the repeaters. I am confident that it will
work but I expect minor problems.

If we do not do something to improve the user speed then we most certainly
going to lose many of them. 1200 baud (even 2400) is archaic in today's
world. When we have 14400 (56K compressed) and higher going over phone
lines. If we as amateur cannot do better we mind as well throw in the towel.

On the subject of Freq coordination, which is very hot in this area as
it is in many areas of the country (mostly urban), the assignments for
digital repeaters is fundamentally different than those for voice repeaters.

Voice repeaters are touted for their "coverage area" - the more the better.
Ususally they are put on the highest hill. Few use beams because there is
no need to. This means that a repeater pair assigned to this "wide coverage"
system has to be protected over a large area, even into other areas, unless
rarely used 'PL' frequency sharing is employed.

Digital repeaters, on the other hand, should be low profile "celled" design.
The repeaters itself (440) should probably be limited to 100 watts or less
ERP and antenna heights limited to coverage area line of sight. Users
should use low power (2-5 watts) with a beam (7-11 elements) pointed at
the repeater of interest, for an ERP of no more than 50 watts. Again
antennas should be mounted relatively low, only high enough to meet the
line of sight requirements to the repeater.

By following these guidelines most areas could reuse frequency pairs much
more conservatively than when using voice as we know it. In fact 2 or 3
pairs could cover and entire metropolitain area with many sites. It is
important that we get this point across to the anti-digital crowed. This
echos the AM/SSB days. We all know that SSB is superior for our objectives
to AM. Sure AM sounds better but that is about it. Many of the same
arguments can be made for digital. Conceivably 10 years from now all of
the repeaters will be digital (voice) highly compressed.

Doug

162. Re: [NETSIG:168] Re: Users and 9600 baud

From: crompton@nadc.nadc.navy.mil (D. Crompton)
Date: Mon, 31 Oct 94 10:57:36 -0500
To: netsig@tapr.org
Message-ID: <9410311557.AA14641@nadc.nadc.navy.mil>

Rendered body type: text/plain

Where can I get a compiled list of radios that work on 9600 and the
required MODS. I am putting together a "how to" for 9600 and need to
include it. Preferably in digital form, but if not I could scan it.

Doug

November 1994

Original source file: netsig.9411
Source: http://ftp.tapr.org/tapr_history/SIG_Archives/netsig/mail_archive/netsig.9411

1. Node Busy

From: mmunster@qualcomm.com (Marvin Munster x5388)
Date: Mon, 31 Oct 1994 09:37:35 -0700
To: netsig@tapr.org
Message-ID: <aadacb7c3f0210043cad@[129.46.12.181]>
Rendered body type: text/plain

I had an interesting experience this weekend. After a large file was sent
across the node, all second connects (node0 c node1) were met with the
response of "Node Busy". Looking at the stats file showed that the buffers
were in the low 100s. This was the only thing I could find. I also lost
Sysop control. I had to take a hike to the mounton top and do a soft
reboot. This cured the problem. Anyon else have this experience? By the
way, I am still having problems with Sysop control.

Node is X1J/2. Parameters were sent out on the 20th of Oct. under the
subject of "[NETSIG:110] Help with X1J/2 parms".

Marvin Munster, WB6PKK
mmunster@qualcomm.com

2. Re: [NETSIG:168] Re: Users and 9600 baud

From: jkbe@aluxs.att.com (John Bednar)
Date: Mon, 31 Oct 94 12:55:40 EST
To: netsig@tapr.org
Message-ID: <9410311755.AA02380@lena>
Rendered body type: text/plain

>On Sat, 29 Oct 1994, Klarsen wrote:

>>   So if there is someone that thinks we all can just put 9600 baud
>> modems into tnc's and wire them up and go are deluded. I have worked with

>Yup I do. You want proof, come to Detroit. We even have people here that
>wanted to get into packet and their very first packet system was a 9600 baud
>one.

FYI..
If you purchased a chrome case TEKK (mini/micro I forget) in 1993
or the first few months of 1994 you are guaranteed to have problems
at 9600. Later units should be modified to bypass the limiter and
improve the frequency response. Maybe this is responsible for poor
results vs. "plug & play" results! (I believe this is also true for
early TEKKs shipped my PacComm) For the mods, check the posting I
made last week.

Getting on 9600 with a TEKK and a TNC is a lot easier than I once thought.
I don't believe it's a no-brainer (I have heard of hams that couldn't
get 1200 baud TNC's hooked up. The average ham these days should
be able to purchase a TEKK (already modified) and a TNC, make a cable,
and use it. To make tx adjustments, I plan to install a deviation meter
in our 9600 bps user node. That addition in our 1200 baud node has
helped countless hams.

> Now 19200 may be a different story, how about that speed?
>
>Ron N8FOW

Has anyone modified TEKKs for 19.2 Kbps? It looks like the
TX is ok. I'm looking for drop-in 1st IF crystals right now.

John, WB3ESS

3. Imminent death of amateur radio predicted

From: bruce@pixar.com (Bruce Perens)
Date: Mon, 31 Oct 94 14:17 PST
To: netsig@tapr.org
Message-ID: <m0r2530-00063gC@mongo.pixar.com>
Rendered body type: text/plain

What's really bothered me for a long, long time is that "computer"
amateur radio is lumped in with the rest of Amateur Radio. Why? Our
needs are radically different from theirs. There was a good proposal
for a Digital Experimenters radio license a few years back. The FCC
dumped that proposal in favor of the creation of a no-code Technician's
license, which left us saddled with 80 years worth of obsolete
regulation. Imagine if there had been a new "digital" service free of
third-party restrictions and miscelaneous Amateur Radio baggage. We
might now be seeing a lot more action on 2400 MHz (or whatever band
that service would be working on).

        Bruce Perens AB6YM

4. (no subject)

From: <MITCHELL.T@OCF.compuserve.com>
Date: 31 Oct 94 18:32:58 EST
To: <netsig@tapr.org>
Message-ID: <OCF_3442-50907@CompuServe.COM>
Rendered body type: text/plain

*Message:
From: MITCHELL.T at CCPO.KCPO
Date: 10/31/94 5:12PM
To: INTERNET:netsig@tapr.org at OCF_INFORM
Contents:
help

5. Re: [NETSIG:183] Re: Users and 9600 baud

From: nielsen@PrimeNet.Com (Bob Nielsen)
Date: Mon, 31 Oct 1994 21:57:58 -0700
To: netsig@tapr.org
Message-ID: <199411010457.VAA24510@news.primenet.com>
Rendered body type: text/plain

>Where can I get a compiled list of radios that work on 9600 and the
>required MODS. I am putting together a "how to" for 9600 and need to
>include it. Preferably in digital form, but if not I could scan it.
>
>Doug

Mike Curtis, WD6EHR, has put together a document containing much of this
type information. I believe he is not currently on the Internet, but a copy
of the latest version is on tcet.unt.edu as /tapr/9600/96man2x0.txt. This
is obviously not all-inclusive, as the number of 9600-capable radios has
grown much recently, but it does cover mods to quite a few of the
commonly-used radios.

Bob

Bob Nielsen, W6SWE
Tucson, AZ
nielsen@primenet.com

6. Forward: Re: Forward: [NETSIG:142] Re: TEKK 1st IF filters

From: 76576.2003@compuserve.com Tue Nov 01 07:57:03 1994
Date: Tue, 01 Nov 94 09:59:23 EST
To: netsig@tapr.org (netsig (tapr))
Message-ID: <05639.15021573@RAMail>
Rendered body type: text/plain

FYI
------- Redirected Message -------
From: 76576.2003@compuserve.com (Gwyn Reedy W1BEL)
Date: 01 Nov 94 07:22:19 EST
To: <tmoulton@ram.net>
Subject: Re: Forward: [NETSIG:142] Re: TEKK 1st IF filters
Reply-To: 76576.2003@compuserve.com

PacComm stocks and sells filters for the TEKK radios. We have filters for
better 9.6 operation and for 19.2. Send for a catalog for details. Prices
are well below $60, but if you change all the filters you're still in the $40
 class.

PacComm   To order a catalog call 800-486-7388 or send e-mail.

7. Re: [NETSIG:183] Re: Users and 9600 baud

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Tue, 1 Nov 1994 07:32:27 -0700 (MST)
To: netsig@tapr.org
Message-ID: <Pine.SUN.3.90.941101072611.21042A-100000@kazak>
Rendered body type: text/plain

On Mon, 31 Oct 1994, D. Crompton wrote:

> Where can I get a compiled list of radios that work on 9600 and the
> required MODS. I am putting together a "how to" for 9600 and need to
> include it. Preferably in digital form, but if not I could scan it.
>
> Doug
>
>

Doug, it's a hell of a problem. Case in point: I bought a Tekk radio and modem from PacComm and they work fine. Then I see msg's saying if you buy Tekk from the distributer you must modify the radio for 9600 baud!

So my point is this: Can you say the Tekk KS-900 radio is 9600 baud ready? I say no. You must include a lot of information.

But somebody said you can get a MFJ system that is both radio and tnc for 9600 baud for like $120. That IS the way to go!

-karl

8. Re: [NETSIG:184] Node Busy

From: mfoster@amoco.com (Michael H. Foster)
Date: Tue, 1 Nov 94 10:47:23 CST
To: netsig@tapr.org
Message-ID: <9411011647.AA28670@gp3.trc.amoco.com>
Rendered body type: text/plain

Marvin, you need the patch issued by Dave Roberts....
After a few hundred hours of online testing at our worst case node, the patch appears to have fixed the lost buffers ("node busy") stuff.

Patch the file THENET1.X1J, location 0x13d9 from x2a to x24 and that will correct the problem. I used a simple hex file editor to do this. And reprogram your eprom.

- Mike wa5txx
mfoster@trc.amoco.com

9. MFJ-9600 modem modification needed.

From: "David C. Bray" <TDCBR@chevron.com>
Date: 01 Nov 94 10:42:07 PST
To: netsig@tapr.org
Message-ID: <199411011841.AA56114@portal.chevron.com>
Rendered body type: text/plain

To: NETSIG1 --INTERNET TAPR NETSIG

FROM: David C. Bray dcbr@chevron.com
CITC/CSD CTN 675-3838 Area Code 303

Subject: MFJ-9600 modem modification needed.
Hi All,
I have been working with other node-ops around my area to assist them with setting up 9600 baud links, and have found a disturbing characteristic of ALL FIVE of the MFJ-9600 modems I have come in contact with.
If the transmit output level on the modem is set to anything over the lower 1/3 or 1/2 of the adjustment range the signal becomes very distorted. I have determined that the source of this trouble is when the signal passes through Q4 and Q5 on the modem board. I have been bypassing these transistors by removing C34 and C37, connecting them in series, and re-inserting them back into the board so that the signal will still go from U10 (pin 1) to the output of the modem. The only reason I can see that Q4 and Q5 are there in the first place is to remove the TXD line from PLL radios when the oscillator you are modulating is also a reference for the receiver.
When this change is made, the modem gives a clean output signal, and is working well in our network at all five locations where these modems are in place.
I have successfully interfaced this modem with Motorola Micor

UHF mobile, Motorola Maxar UHF mobile, and Motorola Syntor UHF
mobile radios.
     I hope this helps all of you out there.

               73s   -Dave- N0ITS @ KB0CZV.#NWCO.CO

      email: dcbr@chevron.com

10. Re: [NETSIG:184] Node Busy

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Tue, 1 Nov 1994 13:32:19 -0700 (MST)
To: netsig@tapr.org
Message-ID: <Pine.SUN.3.90.941101132312.25684A-100000@kazak>
Rendered body type: text/plain

On Tue, 1 Nov 1994, Marvin Munster x5388 wrote:

> I had an interesting experience this weekend. After a large file was sent
> across the node, all second connects (node0 c node1) were met with the
> response of "Node Busy". Looking at the stats file showed that the buffers
> were in the low 100s. This was the only thing I could find. I also lost
> Sysop control. I had to take a hike to the mounton top and do a soft
> reboot. This cured the problem. Anyon else have this experience? By the
> way, I am still having problems with Sysop control.
>
> Node is X1J/2. Parameters were sent out on the 20th of Oct. under the
> subject of "[NETSIG:110] Help with X1J/2 parms".
>
> Marvin Munster, WB6PKK
> mmunster@qualcomm.com

        Marvin, I was told that the code in the X1J version 2 files was
messed up and problems like you had are likely to occur. I run 2 X1J
version 1 nodes and have had zero problems.

-karl k5di

11. Re: [NETSIG:186] Imminent death of amateur radio predicted

From: hprice@bektek.com (Harold Price)
Date: Tue, 01 Nov 1994 17:40:12 -0400
To: netsig@tapr.org
Message-ID: <199411012246.RAA06314@ivory.lm.com>
Rendered body type: text/plain

>What's really bothered me for a long, long time is that "computer"
>amateur radio is lumped in with the rest of Amateur Radio. Why? Our
>needs are radically different from theirs. There was a good proposal
>for a Digital Experimenters radio license a few years back. The FCC
>dumped that proposal in favor of the creation of a no-code Technician's
>license, which left us saddled with 80 years worth of obsolete
>regulation. Imagine if there had been a new "digital" service free of
>third-party restrictions and miscelaneous Amateur Radio baggage. We
>might now be seeing a lot more action on 2400 MHz (or whatever band
>that service would be working on).
>
>   Bruce Perens AB6YM

Do you mind if I put this message, as is, into my next QEX column? The context
is a followup to the previous months ranting about lack of forward progress,
and lack of relevance in a digital world that has passed us by.

Harold Price
nk6k

12. Re: [NETSIG:190] Re: Users and 9600 baud

From: bruce@pixar.com (Bruce Perens)
Date: Tue, 1 Nov 94 15:15 PST
To: netsig@tapr.org, netsig@tapr.org
Message-ID: <m0r2SQA-0006j9C@mongo.pixar.com>
Rendered body type: text/plain

Karl said:
> So my point is this: Can you say the Tekk KS-900 radio is 9600
> baud ready? I say no. You must include a lot of information.

I think the problem may only exist with the KS-960 (the chrome one), and
not the KS-900. Has anyone ever had to swap filters in a KS-900? If nobody
has, we've an easy answer.

I bought a KS-900 a month ago, and a KS-960 last year, and both
seem to work fine on 9600. Both were direct from TEKK.

        Thanks

        Bruce Perens AB6YM

13. Re: [NETSIG:195] Re: Users and 9600 baud

From: hank_oredson@MENTORG.COM (Hank Oredson)
Date: Tue, 1 Nov 94 16:04:51 PST
To: netsig@tapr.org
Message-ID: <9411011604.ZM11781@hanko>
Rendered body type: text/plain

On Nov 1, 5:46pm, Bruce Perens wrote:
> Subject: [NETSIG:195] Re: Users and 9600 baud
> Karl said:
> > So my point is this: Can you say the Tekk KS-900 radio is 9600
> > baud ready? I say no. You must include a lot of information.
>
> I think the problem may only exist with the KS-960 (the chrome one), and
> not the KS-900. Has anyone ever had to swap filters in a KS-900? If nobody
> has, we've an easy answer.
>
> I bought a KS-900 a month ago, and a KS-960 last year, and both
> seem to work fine on 9600. Both were direct from TEKK.

I just plugged my KS-900 into the electricity, the Data Engine,
and the antenna, and it has worked just fine ever since.

   ... Hank

--

Hank Oredson @ Mentor Graphics   Library Operations
Internet   : hank_oredson@mentorg.com   "Parts 'R Us!"
Amateur Radio: W0RLI@W0RLI.OR.USA.NOAM

14. Re: [NETSIG:171] Re: Eroding bands

From: n3kfh@centrum.is (Don Dietz)
Date: Wed, 02 Nov 1994 00:06:55 +0000
To: netsig@tapr.org
Message-ID: <199411020045.AAA26426@plaza.centrum.is>
Rendered body type: text/plain

In reply to Greg Jones:

>It is not a question of money. The question is -- can we somehow get the
>FCC to set aside recreational parklands (i.e. Freq) for non-commercial users
>(i.e. hams).
>
>All we need is a small part of each band in order to allow us to have space
>to play. We don't need the several billion dollars of band space we have
>had use of for the last several decades.
>
>Times a changing. We just need to make srue that we don't lose everything.
>
>Cheers - greg
>
>
Well, ok Greg. I see your point here, but isn't this almost what we have now?
The only difference is that we are now sharing these bands with government
services, for the most part.

The only thing we really need to concern ourselve's with, I believe, is
losing too much of what we already have. That seems to be the thing that
most of us are really concerned with anyway.

Cheers - Don

Don Dietz, N3KFH /TF8
Certified Electronics Technician,
   Communications Journeyman (ISCET) MD-250

Internet: n3kfh@centrum.is   Packet: n3kfh@tf3lj.isl.eu
          ddietz@rhi.hi.is   n3kfh@k4ry.#cenal.al.usa.noam

Coming to you direct from Keflavik, Iceland!

15. Re: [NETSIG:197] Re: Eroding bands

From: Greg Jones <gjones@tenet.edu>
Date: Tue, 1 Nov 1994 19:51:31 -0600 (CST)
To: netsig@tapr.org
Message-ID: <199411020151.TAA25835@Kay-Abernathy.tenet.edu>
Rendered body type: text/plain

According to Don Dietz:
> Well, ok Greg. I see your point here, but isn't this almost what we have now?
> The only difference is that we are now sharing these bands with government
> services, for the most part.
>
> The only thing we really need to concern ourselve's with, I believe, is
> losing too much of what we already have. That seems to be the thing that
> most of us are really concerned with anyway.
>

Actually the problem is that since we are secondary and if things go as they
are, we will continue to be secondary and the primary business users will
tell us to get off.

Being secondary on a goverenment freq that is never used in one thing.
Secondary on a commerical freq is something else.

Greg

16. Re: [NETSIG:195] Re: Users and 9600 baud

From: jkbe@aluxs.att.com (John Bednar)
Date: Wed, 2 Nov 94 08:33:58 EST
To: netsig@tapr.org
Message-ID: <9411021333.AA03047@lena>
Rendered body type: text/plain

> Karl said:
> > So my point is this: Can you say the Tekk KS-900 radio is 9600
> > baud ready? I say no. You must include a lot of information.
>
> I think the problem may only exist with the KS-960 (the chrome one), and
> not the KS-900. Has anyone ever had to swap filters in a KS-900? If nobody
> has, we've an easy answer.
>
> I bought a KS-900 a month ago, and a KS-960 last year, and both
> seem to work fine on 9600. Both were direct from TEKK.
>   Bruce Perens AB6YM

Yes, the older black cased TEKK works right out of the box at 9600
however, you can improve the performance by making the mods posted.

Bruce, you might check your chrome cased TEKK and let us know if the
TX limiter has been by-passed by TEKK. The original units worked at
9600 bps but performace was poor. I purchased mine in early 12/93
(limiter not by-passed).
With the posted modifications to the chrome cased TEKK the
performance greatly improved.

If performance is still poor after the modifications, check
the IF tuning. We had one TEKK that was out of tune and it was
abnormal until correctly tuned. We caught that one by measuring the
RX frequency response vs. frequency.

John, WB3ESS

17. TEKK Radio Modifications

From: bruce@pixar.com (Bruce Perens)
Date: Wed, 2 Nov 94 15:03 PST
To: netsig@tapr.org, netsig@tapr.org
Message-ID: <m0r2oij-0006BgC@mongo.pixar.com>
Rendered body type: text/plain

John,

Thanks for the note on KS-900 working correctly out of the box. I would
appreciate if you would re-post your modifications to the KS-960 and
KS-900 with more explanation of what they _do_. For instance you say to

add a resistor to the KS-900 without ever mentioning what the resistor
is for.

However, we have an answer to one of Karl's questions. We can tell the
new high-speed operators to buy a KS-900 rather than a KS-960. Thanks!

        Bruce Perens AB6YM

18. Re: [NETSIG:154] Eroding bands

From: Scott Luers <luers14@odi.cwc.whecn.edu>
Date: Wed, 2 Nov 1994 17:11:55 -700 (MST)
To: netsig@tapr.org
Cc: netsig@tapr.org
Message-ID: <Pine.SCO.3.90.941102170157.5376A-100000@odi.cwc.whecn.edu>
Rendered body type: text/plain

On Fri, 28 Oct 1994, Klarsen wrote:

>
>   As the mail on this sig has identified, the fcc is selling off
> some spectrum. Since we CO_USE every Hz of our spectrum above 148 MHz,
> this is a chance for improvement, not doom. I say lets BUY some spectrum
> for Ham Radio! We will then be the primary users and can use it as we see
> fit. This is where the ARRL can do some real good.
>
>   I will watch and may try to buy some spectrum myself. I would
> like to own some in the 43 GHz region...no, I won't say why.
>
> -karl
>

Well when i win 3 or 4 lotteryes in a row i'll buy some. since the last bid's
for spectrum were several BILLION dollars. Now the politican's have quick
money in a place thay never realized was so valuable.
unless we get every ham to write 6 letters to each congressman. all we
will hear is

                  SOLD to corporation _____________.
and the most valuable bands are the ones that most hams don't care about.
but mean the most to the future development of ham raid0, above 1 Gig

73's kb7wol scott

19. New ALINCO 6M Radios

From: daniel.meredith@aznetig.stat.com (Daniel Meredith)
Date: Thu, 3 Nov 1994 01:52:28 GMT
To: netsig@tapr.org
Message-ID: <9411021918074@aznetig.stat.com>
Rendered body type: text/plain

Hi All!
    Has anyone determined whether or not the new 6m FM rigs by Alinco
can be modified to operate on at least 4800 baud? I'm just curious..
It sure would be an easy backup for our network in this area....

Dan

-----   \---------------/   -----
                    Arizona Network Intertie Group
                "Serving Az's Digital Needs Since 1993"

Daniel J. Meredith - N7MRP   Voice: +1-602-809-7384
P.O. Box 44563   Fax : +1-602-956-2566
Phoenix, Arizona   BBS : +1-602-912-0225
          85064-4563

List Owner: F6fbb-List@Stat.Com
Arizona Amateur Radio Packet Coordinator

20. Re: [NETSIG:200] TEKK Radio Modifications

From: "William L. Barnes" <wlbarn@planetx.bloomu.edu>
Date: Thu, 3 Nov 1994 08:51:33 -0500 (EST)
To: netsig@tapr.org
Cc: netsig@tapr.org
Message-ID: <Pine.SUN.3.90.941103084953.2711A-100000@planetx>
Rendered body type: text/plain

On Wed, 2 Nov 1994, Bruce Perens wrote:

> However, we have an answer to one of Karl's questions. We can tell the
> new high-speed operators to buy a KS-900 rather than a KS-960. Thanks!

I bought the KS-900 and it works fine... I did the mods that John told
about and it helped a little bit on weak signal recieve...

73, de Bill, N3JIX
```
*********************************************************************
* Bill Barnes, N3JIX                    * Bloomsburg Unviersity     *
* Internet:  wlbarn@planetx.bloomu.edu  * Bloomsburg, Pa            *
* Packet  :  n3jix@n3jix.#epa.pa.usa.noam                           *
*********************************************************************
```

21. Thread Retrieval??

From: Joe Lanoue <70412.22@compuserve.com>
Date: 03 Nov 94 10:43:26 EST
To: <netsig@tapr.org>
Message-ID: <941103154325_70412.22_CHV58-1@CompuServe.COM>
Rendered body type: text/plain

Is there a method of getting a List of previous Threads and for retrieving
a specific Thread??

73...Joe...k1vdz

22. Source of this List Processing system

From: djk@dirku.demon.co.uk (Dirk-Jan Koopman)
Date: Thu, 3 Nov 1994 16:00:22 +0100 (GMT)
To: netsig@tapr.org
Message-ID: <m0r34aN-0004mbC@dirku>
Rendered body type: text/plain

Please could you tell me whether the source of this mailing list
processor system is available in the public domain?

Dirk

23. Re: [NETSIG:204] Thread Retrieval??

From: Greg Jones <gjones@tenet.edu>
Date: Thu, 3 Nov 1994 11:01:47 -0600 (CST)
To: netsig@tapr.org
Message-ID: <199411031701.LAA22720@Kay-Abernathy.tenet.edu>
Rendered body type: text/plain

As a reminder all message on NETSIG and the other TAPR sigs are available
via the TAPR listserv.

Send a message to listserv@tapr.org and in the body include 'index -all'.
This will send you a list of all files.

When you see a file you want, like the sept.94 netsig messages, then send
another message back to listserv and say 'get netsig sept.94' or whatever
the filename that you want other than sept.94. 'get area filename' is the
syntax.

Cheers - greg

According to Joe Lanoue:
>
> Is there a method of getting a List of previous Threads and for retrieving
> a specific Thread??
>
> 73...Joe...k1vdz
>
>
>

24. Re: [NETSIG:205] Source of this List Processing system

From: bruce@pixar.com (Bruce Perens)
Date: Thu, 3 Nov 94 12:23 PST
To: netsig@tapr.org
Message-ID: <m0r38hT-0006X6C@mongo.pixar.com>
Rendered body type: text/plain

If you are setting up a new list processor, I suggest you run SmartList.
The tar archives for procmail and SmartList (you need both) are

available from ftp.informatik.rwth-aachen.de (137.226.225.3), under
directory /pub/packages/procmail/ .

This list is distributed using ListProcessor, which works for TAPR
and is publicly available, but I can't recommend it after the problems
I had when I ran it on my system. In contrast, smartList has been
trouble-free.

There's also a publicly available list-server program called MajorDomo
that I've heard good things about. MajorDomo is written in Perl.

What does this have to do with radio? The list processors can be used
to distribute list mail directly to TCP/IP systems, and to AX.25 BBS
systems via a mail gateway.

        Bruce Perens

25. Re: TEKK Radio Modifications

From: jkbe@aluxs.att.com (John Bednar)
Date: Thu, 3 Nov 94 09:07:54 EST
To: netsig@tapr.org
Message-ID: <9411031407.AA00569@lena>
Rendered body type: text/plain

Good suggestion Bruce.

Hows's this? The KS960 will be re-done later.

John, WB3ESS

         Tekk Data Radio Mods for 9600 bps
               by John Bednar, WB3ESS

These modifications are not for the TEKK model KS-960 (the
radio in the chrome case).

TEKK KS-900L Receiver Modification

The KS900 recovered audio has a high frequency (2.2MHz) signal
superimposed on the recovered audio. This high frequency signal
causes jitter in the sliced output. To eliminate the unwanted
signal, install a lowpass RC filter in the audio signal line
with a corner frequency well above the frequencies of interest.

The modification: At the 9-pin interface connector add a 2.7k
ohm resistor in series with the wire going to connector pin 5.
Next, solder a 0.001uf capacitor between pin 2 and pin 5 of
the same connector.

TEKK KS-900L Transmitter Modification

The stock KS900 transmit modulation response is not flat from
"dc to 7.2 Khz". To correct this deficiency, the input coupling
capacitor must be increased in value. I have found it easier to
solder in the additional capacitor without removing the board
from the case.

The modification: Solder a 3.3uf tantalum capacitor (observe
the polarity) in parallel with capacitor C31. The transmit
requirements are not changed so re-adjusting the transmit
level will not be required.

26. Re: TEKK Radio Modifications

From: jkbe@aluxs.att.com (John Bednar)
Date: Thu, 3 Nov 94 14:46:33 EST
To: netsig@tapr.org
Message-ID: <9411031946.AA00762@lena>
Rendered body type: text/plain

Tekk Data Radio Mods for 9600 bps
               by John Bednar, WB3ESS

These modifications are for the TEKK model KS-960 (the
radio in the chrome case).

These modifications were developed in December 1993
and sent to TEKK in early January 1994. I have received
coorespondence that indicates both TEKK and PacComm are
currently modifying radios with this procedure. Check your
radios to verify that all steps are completed.

TEKK KS-960L Receiver Modification

The un-modified KS960 recovered audio is attenuated by
a single pole RC filter on the receiver output. The roll-
off begins around 1200hz in an unmodified radio. Please
note that a simple low-pass filter is required to eliminate
a high frequency (2.2MHz) conversion product. The solution
is to move the corner frequency of this RC filter well
above the frequencies of interest.

The modification: Remove chip capacitor C18 and replace
it with a 0.001uf leaded capacitor or chip capacitor.

TEKK KS-960L Transmitter Modification

The un-modified KS960 transmitter suffers from several
problems. First, this radio contains an input amplifier,
a limiter, and a reconstruction filter in the input of the
transmit section. Secondly, the modulator frequency response
is not not flat from "dc to 7.2 Khz".

The solution is to bypass and ground the input to
the existing limiter circuit and to modify the modulator
to achive a flat frequency response.

The modification:
1) Remove the wire attached to pin 4 of the 9-pin connector and
solder it to ground.
2) Solder the (+) lead of a 10uf tantalum capacitor with 0.2"
leads to the 9-pin connector - pin 4.
3) Prepare a 1.8" piece of wire with 0.2" ends and solder one end
of the wire to the (-) lead of the capacitor added in step 2.
Tuck the other end of the wire around the circuit board in the
corner. Don't use the corner where the BNC is mounted.
4) Locate the junction of C43, C92, and R41. Form the wire, trim
the end to 0.1" and solder it carefully to this junction.
5) Locate the junction of R43 and C47. Carefully remove the
solder from that solder pad. With a sharp knife cut the trace
diagonally between R43 and C47. Check your cut with an ohm
meter to insure that the trace is open. If you break R43, C47,
C48 or C49 don't worry because these parts are no longer used.
6) Locate potentiometer VR1 and turn it fully CW.
7) Re-adjust the transmit frequency and the transmit deviation.

27. Re: [NETSIG:200] TEKK Radio Modifications

From: dreamer@lhaven.UUmh.Ab.Ca (Lawrence *The Dreamer* Chen)
Date: Thu, 3 Nov 1994 10:21:07 -0500
To: netsig@tapr.org
Message-ID: <9411031521.6qq7@lhaven.UUmh.Ab.Ca>
Rendered body type: text/plain

Hi Bruce (Bruce Perens), in <m0r2oij-0006BgC@mongo.pixar.com> on Nov 2 you wrote:

> John,
>
> Thanks for the note on KS-900 working correctly out of the box. I would
> appreciate if you would re-post your modifications to the KS-960 and
> KS-900 with more explanation of what they _do_. For instance you say to
> add a resistor to the KS-900 without ever mentioning what the resistor
> is for.
>
> However, we have an answer to one of Karl's questions. We can tell the
> new high-speed operators to buy a KS-900 rather than a KS-960. Thanks!
>
Now I have a question for this thread.

Can the KS-900 be used for 1200 baud and 9600 baud at the same time easily?

I'm looking interested in getting a 9600 bps ready radio with a KPC9612,
right now the backbone is only 1200 baud, but I want to be ready for 9600.
(of course down the road I might swap the KPC9612 for a 9600 bps only TNC, but
for now I just want to play around with the possibility.....)

28. RE: [NETSIG:210] Re: TEKK Radio Modifications

From: Murphree Michael A <mamurphree@space.honeywell.com>
Date: Fri, 04 Nov 94 08:58:00 PST
To: netsig <netsig@tapr.org>
Message-ID: <2EBA58F0@smtpdos.space.honeywell.com>
Rendered body type: text/plain

>Can the KS-900 be used for 1200 baud and 9600 baud at the same time easily?
>
>I'm looking interested in getting a 9600 bps ready radio with a KPC9612,
>right now the backbone is only 1200 baud, but I want to be ready for 9600.
>(of course down the road I might swap the KPC9612 for a 9600 bps only TNC,
but
>for now I just want to play around with the possibility.....)

The stock KS-960 (chrome case) works well at 1200 baud and contains a
microphone amp.
When you get ready to upgrade perform the mods for 9600...

Mike N4CNW, mamurphree@space.honeywell.com

29. (no subject)

From: "Montgomery, Don" <montgd@sdcpos3b.daytonoh.NCR.COM>
Date: Fri, 04 Nov 94 08:48:00 PST
To: 'netsig' <netsig@tapr.org>
Message-ID: <2EBA66B5@p003103gw1.daytonoh.ncr.com>
Rendered body type: text/plain

SUBSCRIBE

30. Re: TEKK radio mods

From: "Battles, Brian, WS1O" <bbattles@arrl.org>
Date: Fri, 04 Nov 94 10:32:00 EST
To: netsig <netsig@tapr.org>
Message-ID: <2EBA5473@arrl.org>
Rendered body type: text/plain

 >Subject: [NETSIG:208] Re: TEKK Radio Modifications
 >Date: Thursday, November 03, 1994 18:48
 >
 >   Tekk Data Radio Mods for 9600 bps
 >   by John Bednar, WB3ESS
 >
 >These modifications are not for the TEKK model KS-960 (the radio in the
chrome case).
 >
 >TEKK KS-900L Receiver Modification
 >
 >The KS-900 recovered audio has a high-frequency (2.2-MHz)....

I'm confused; the 900 is the one in the black case, right? And the 960 is in
the chrome case, yes?

I have a 900 that I got with my Gracilis PackeTwin, and I'd like to see if I
can make it work better. The local Switch boss sez the signal from the 900
(when he can hear it!) is pitiful...<sigh>

  John, just to be *positive* I have this right, could you MAIL me the
proper info file? Thanks!

    ---CUL es 73 de BB

 ____
 Brian Battles, WS1O   The World's Foremost Authority
 QST Features Editor, ARRL HQ
 Internet bbattles@arrl.org Compu$erve 70007,3373
 MCI   215-5052   Amprnet   ws1o@ws1o-2.ampr.org
  -
   ALL COMMENTS ARE MY OWN PRIVATE, PERSONAL REMARKS AND
    IN NO WAY CONSTITUTE OFFICIAL ARRL VIEWS OR POLICY.

31. Re: [NETSIG:213] Re: TEKK radio mods

From: Glenn Elmore <glenne@eagle.sr.hp.com>
Date: Fri, 4 Nov 1994 08:00:56 -0800 (PST)
To: netsig@tapr.org
Message-ID: <9411041600.AA19303@eagle.sr.hp.com>
Rendered body type: text/plain

Brian Battles, WS1O writes:

> I'm confused; the 900 is the one in the black case, right? And the 960 is in
> the chrome case, yes?
>
> I have a 900 that I got with my Gracilis PackeTwin, and I'd like to see if I
Brian,
  I'm glad you posted this. I'm confused too. In fact, I think there
is a whole lot of confusion WRT the Tekk radios, model numbers and what
modifications do or do not need to be done.

  I recently examined a pair of radios recently (Sept '94) purchased from
Tekk which were in a chrome case. I also obtained two sets of
documentation from Bruce Perens. One set was for the "T-Net Micro",
models KS900 and KS900L. The other was for the "T-net Mini" and
apparantly model number KS-900N. The radios I looked at matched the
"T-net Mini" description. I don't have a copy of the shipping invoice
here to tell what Tekk called them.
  I've previously posted my measurements of these radios' performance
and on the differences indicated between them by the "T-net Micro"
documentation. The primary difference appears to be in the receiver IC
and the lack of RSSI and associated DCD circuits in the "Micro". With
regard to 9600 bps operation, both appeared to be limited by the
characteristics of the same 1st IF (21.4 MHz) crystal filter which is
about 15 KHz wide in amplitude and perhaps a tad less between group
delay "horns".

  The radio I examined already appeared to have the tx audio limiter
circuits entirely bypassed and I found that none of the previously
reported modifications appeared necessary. The even order products of
the last IF were not "riding" on the output audio. The only
modification that might apply was in the low frequency response of the
Tx audio which I didn't measure (though BER tests with a TAPR modem
appeared satisfactory).

  So before I would jump in making assumptions about suitability of one
radio over the other or about what modifications the radios do or don't
need, I would ask "someone who knows", what is the version history of
the Tekk radios, what changes have been made in their production and
when did they occur. Maybe that way, we can all be on the same page.

73
Glenn Elmore n6gn

amateur IP: glenn@SantaRosa.ampr.org
Internet: glenne@sr.hp.com

32. TEKK Mods

From: Sperry Davis <sperry@pinn.net>
Date: Fri, 4 Nov 1994 11:36:25 -0500 (EST)
To: netsig@tapr.org
Message-ID: <Pine.3.89.9411041150.B24729-0100000@everest>
Rendered body type: text/plain

We just modified two KS-960 that were purchased 11/93. The mods
made a big difference. Did not find that the 10uF cap in the rx data
line made any difference, what is its purpose? Using the radios with
DPK-9600 tncs. A third KS-960 purchased 4 weeks ago seems to work
quite well out of the box but it seems its txdelay needs to be abt 5
where the older TEKKs are reliable with the txd @2-3.

Sperry/n4sd
  InterNet: sperry@pinn.net
  Amprnet: n4sd.ampr.org [44.62.64.40]
  PBBS: N4SD@WD4MIZ.#TIDE.VA.USA.NOAM

33. Re: [NETSIG:215] TEKK Mods

From: mmunster@qualcomm.com (Marvin Munster x5388)
Date: Fri, 4 Nov 1994 09:35:59 -0700
To: netsig@tapr.org
Message-ID: <aae012bd93021004b612@[129.46.12.181]>
Rendered body type: text/plain

I have been watching all of this TEKK stuff with much interest. I do not know much about the TEKK radios. Could someone please post the phone number of the TEKK manufacturer (dealer, distributor, whatever). I'd like to get better informed.

Marvin - WB6PKK

34. Using TEKK radios with 1200 Baud TNCs

From: bruce@pixar.com (Bruce Perens)
Date: Fri, 4 Nov 94 09:39 PST
To: netsig@tapr.org
Message-ID: <m0r3Sbr-0005oZC@mongo.pixar.com>
Rendered body type: text/plain

> From: dreamer@lhaven.uumh.ab.ca (Lawrence *The Dreamer* Chen)
> Can the KS-900 be used for 1200 baud and 9600 baud at the same time
> easily?

Your 1200-baud TNC _must_ be capable of running open-squelch to use the TEKK radio. The KPC-9612 has that capability and should always be run open-squelch. One of the TEKK radios has a DCD output, but it is not fast enough to be useful.

I modified an Alinco DR-1200 radio for 9600 operation, and have since been using it for 1200 with a _modified_ AEA PK-88. The PK-88 had to be modified with the TAPR state-machine DCD board, because the 9600 modification bypasses the squelch. The PK-88 had a software command to turn off the equalization it would have used were it running on the microphone and speaker outputs. That equalization is usually necessary because FM voice radios use pre-emphasis and de-emphasis to change the noise spectrum of received audio to something that is less offensive to the ear and improve the intelligibility of the received audio. The 9600 modifications bypass pre-emphasis and de-emphasis.

The KPC-9612 is capable of running 1200 and 9600 on the same radio. I suspect that 9600 packet will not reliably activate the DCD (carrier-detect) of every TNC on your 1200-Baud network, and vice-versa, and thus there is less chance for peaceful co-existence than you might think. Moving to a new frequency for 9600 seems to be the accepted strategy.

Thanks

Bruce Perens

35. TEKK Radio Nomenclature

From: bruce@pixar.com (Bruce Perens)
Date: Fri, 4 Nov 94 09:56 PST
To: netsig@tapr.org, netsig@tapr.org
Message-ID: <m0r3SsU-0007gfC@mongo.pixar.com>
Rendered body type: text/plain

The KS-900L is for 430-450, the KS-900H is for 450-470. These are in black boxes, do not have space for an internal modem, and are also called "T-Net Micro".

The T-Net Mini service manual uses different nomenclature than what actually appears on the radio. The FCC ID in the manual is "GOXKS-900", the same as the one for the other radio. The schematics say "KS-900N". However, the sticker on the bottom of the radio identifies it as a KS-960, and the FCC ID on the sticker is "GOX KS-960". This is the silver box with space for TEKK's 4800 modem (but not enough space for any other modem I know) and windows for 4 LEDs to show through the front label.

My KS-960 has serial number 6448, while my KS-900 has serial number 9911. Both radios have an orange dot applied to their labels, and came in paper boxes that also had an orange dot applied to them. I don't have any idea of their revision history, and what modifications have already been done in the factory.

Bruce Perens AB6YM

36. RE: [NETSIG:214] Re: TEKK radio mods

From: Murphree Michael A <mamurphree@space.honeywell.com>
Date: Fri, 04 Nov 94 14:23:00 PST
To: netsig <netsig@tapr.org>
Message-ID: <2EBAA585@smtpdos.space.honeywell.com>

Rendered body type: text/plain

> I recently examined a pair of radios recently (Sept '94) purchased from
>Tekk which were in a chrome case. I also obtained two sets of
>documentation from Bruce Perens. One set was for the "T-Net Micro",
>models KS900 and KS900L. The other was for the "T-net Mini" and
>*apparantly* model number KS-900N. The radios I looked at matched the
>"T-net Mini" description. I don't have a copy of the shipping invoice
>here to tell what Tekk called them.

The KS900 and KS900L designations are now called a TNET MINI
and comes in a black case. The "L" indicated the low UHF range option.

The KS960 radio is now called the TNET MINI and comes in a chrome case.
The MINI has a fancier IF chip with RSSI output and a larger case to
accomodate a modem.

Other observations...

The MINI has cheaper RF final in it! The final in the Micro is rated at 5W
vs.
a 3W final in the MINI. Because both the RX and TX low-level stuff in these

radios have regulators and the finals are 12V models, they will work just
fine
from a 12-14V source. I routinely run the Micro at 12+ V to boost the
output
power delivered to an external amplifier. Since there is no output
protection,
if you anticipate antenna problems, it might be safer to stick with the 9.6V

supply.

Your mileage may vary,

Mike N4CNW, mamurphree@space.honeywell.com

37. Re: [NETSIG:219] Re: TEKK radio mods

From: Glenn Elmore <glenne@eagle.sr.hp.com>
Date: Fri, 4 Nov 1994 10:57:17 -0800 (PST)
To: netsig@tapr.org
Message-ID: <9411041857.AA17119@eagle.sr.hp.com>
Rendered body type: text/plain

Mike, N4CNW writes:

>
> The KS900 and KS900L designations are now called a TNET MINI

                                                    ^^^^ don't you
                                                    mean "MICRO" here?

> and comes in a black case. The "L" indicated the low UHF range option.

  documentation says "L" is 430-450 MHz.

> Other observations...
>
> The MINI has cheaper RF final in it! The final in the Micro is rated at 5W
> vs.
> a 3W final in the MINI. Because both the RX and TX low-level stuff in these
>
> radios have regulators and the finals are 12V models, they will work just
> fine
> from a 12-14V source. I routinely run the Micro at 12+ V to boost the
> output
> power delivered to an external amplifier. Since there is no output
> protection,
> if you anticipate antenna problems, it might be safer to stick with the 9.6V
>
> supply.

  I'm not clear on the differences in the output sections. The MICRO
claims to use an MRF652 which has planar leads and (potentially)
7 deg/watt thermal characteristics. The docs for the MINI claim it
uses an MRF830 which is not shown in Motorola's recent Master Catalog nor
in a couple of revs of the RF Devices catalog.
  As I remember, the MINI uses a device in a TO-5 package and it
probably doesn't have as good thermal characteristics, but it may
depend on how they've mounted it compared to the MRF652 in the MICRO.

I would caution folks about running higher Vcc on these radios. On the MINI I examined, I found that there was a tendency toward instability, particularly at higher Vcc. Large spurious sidebands could be generated with only slight tuning changes very close to a maximum output condition. This was into a 50 ohm resistive load, it could very possibly be even worse with mismatched loads.

I think some analysis of spectral purity and thermal performance is in order before remoting one of these at a high level site with >12 VDC supply. It probably would be a good idea to verify things no matter what supply V one uses.

Glenn Elmore n6gn

amateur IP: glenn@SantaRosa.ampr.org
Internet: glenne@sr.hp.com

38. Re: TEKK radio mods

From: Murphree Michael A <mamurphree@space.honeywell.com>
Date: Fri, 04 Nov 94 16:24:00 PST
To: netsig <netsig@tapr.org>
Message-ID: <2EBAC205@smtpdos.space.honeywell.com>
Rendered body type: text/plain

>> The KS900 and KS900L designations are now called a TNET MINI
>
>   ^^^^ don't you
>   mean "MICRO" here?

GEEZ! Now you've got me doing it.... ;^)

> I'm not clear on the differences in the output sections. The MICRO
>claims to use an MRF652 which has planar leads and (potentially)
>7 deg/watt thermal characteristics. The docs for the MINI claim it
>uses an MRF830 which is not shown in Motorola's recent Master Catalog nor
>in a couple of revs of the RF Devices catalog.

My databook here at work doesn't have the MRF830, but I keep my GOOD databooks at home... And I do have one somewhere that has it. Thermal resistance, Junction to Case is indeed 7 measly degrees per watt. Max Vceo is 16 VDC, Max device dissipation is 25 watts, max junction temp is 200 deg C.

> I would caution folks about running higher Vcc on these radios. On
>the MINI I examined, I found that there was a tendency toward
>instability, particularly at higher Vcc. Large spurious sidebands could
>be generated with only slight tuning changes very close to a maximum
>output condition. This was into a 50 ohm resistive load, it could very
>possibly be even worse with mismatched loads.

No excuse for not verifying proper operation of your equipment, this is true.
Obviously one shouldn't expect too much out of $100 radios, but my general impression of the *MINI* was that it was of poorer quality than the *MICRO*, even though it costs MORE. Layout, parts quality, and out-of-the-box performance were less. I have not seen any stability problems with the radios operating at 12V, though the same could not be said for a particular manufacter's TNC.

> I think some analysis of spectral purity and thermal performance is in
>order before remoting one of these at a high level site with >12 VDC
>supply. It probably would be a good idea to verify things no matter
>what supply V one uses.

One must enjoy travel if they are going to put one of these things at a remote site. Some of the surplus commercial gear would be a much better choice. Tekks are not bad as end user radios and for small links but I wouldn't
use them in critical applications.

Mike N4CNW

39. Paccom Sprint2

From: Sperry Davis <sperry@pinn.net>
Date: Sat, 5 Nov 1994 22:13:50 -0500 (EST)

To: netsig@tapr.org
Message-ID: <Pine.3.89.9411052213.A26666-0100000@everest>
Rendered body type: text/plain

Has anyone on the net had any experience with the new
Paccom Sprint-2 TNC. We are thinking about purchasing
several of them for a 19.2k/38.4 link. Is the 20MHz cpu
option needed if I do not plan on the faster 56k mode?

Thanks,

Sperry/n4sd
  InterNet: sperry@pinn.net
  Amprnet: n4sd.ampr.org [44.62.64.40]
  PBBS: N4SD@WD4MIZ.#TIDE.VA.USA.NOAM

40. RE: [NETSIG:215] TEKK Mods

From: aed@drsi.redirect.cftnet.com
Date: Sat, 5 Nov 94 22:24:43 EST
To: netsig@tapr.org
Message-ID: <Chameleon.4.00.4.941105222841.Postmaster@.drsi.com>
Rendered body type: text/plain

>We just modified two KS-960 that were purchased 11/93. The mods
>made a big difference. Did not find that the 10uF cap in the rx data
>line made any difference, what is its purpose? Using the radios with
>DPK-9600 tncs. A third KS-960 purchased 4 weeks ago seems to work
>quite well out of the box but it seems its txdelay needs to be abt 5
>where the older TEKKs are reliable with the txd @2-3.
>
>Sperry/n4sd
> InterNet: sperry@pinn.net
> Amprnet: n4sd.ampr.org [44.62.64.40]
> PBBS: N4SD@WD4MIZ.#TIDE.VA.USA.NOAM
>
>

Sperry,

        We've found over time that the 10uf cap is important to
achieve good low frequency response for a low BER at 9600. Some
(the better) radios will have this on their data output lines as
they come from the factory.
        A longer TXdelay can actually indicate slow receiver
recovery time. If the link works with UI packets, but needs a longer
TXD when connected, that usually corresponds with slow-ish rx
recovery.

Regards,

Andy KC2FF
DRSI

41. Re: [NETSIG:222] Paccom Sprint2

From: tmoulton@ram.net
Date: Sun, 06 Nov 94 08:03:35 EST
To: netsig@tapr.org
Message-ID: <05666.15021573@RAMail>
Rendered body type: text/plain

>From: netsig@tapr.org (netsig (tapr))
>Date: Sat, 5 Nov 94 21:18 CST
>Reply-To: netsig@tapr.org
>Sender: netsig@tapr.org
>To: netsig@tapr.org
>Subject: [NETSIG:222] Paccom Sprint2
>
> Has anyone on the net had any experience with the new
>Paccom Sprint-2 TNC. We are thinking about purchasing
>several of them for a 19.2k/38.4 link. Is the 20MHz cpu
>option needed if I do not plan on the faster 56k mode?
>
>Thanks,
>
>Sperry/n4sd
> InterNet: sperry@pinn.net
> Amprnet: n4sd.ampr.org [44.62.64.40]
> PBBS: N4SD@WD4MIZ.#TIDE.VA.USA.NOAM

>

It partly depende upon what code you will be running in it.

tom, w2vy

42. Re: [NETSIG:198] Re: Eroding bands

From: n3kfh@centrum.is (Don Dietz)
Date: Sun, 06 Nov 1994 21:09:47 +0000
To: netsig@tapr.org
Message-ID: <199411062124.VAA26861@plaza.centrum.is>
Rendered body type: text/plain

>Actually the problem is that since we are secondary and if things go as they
>are, we will continue to be secondary and the primary business users will
>tell us to get off.
>
>Being secondary on a goverenment freq that is never used in one thing.
>Secondary on a commerical freq is something else.
>
>Greg
>

As far as I know Greg, amateur radio doesn't share any frequencies with
commercial services. Commercial users are paying a premium for exclusive
use of the freqs they're using, so I don't ever see that situation changing.
 If we continue to be classified as amateurs, we will surely share our part
of the spectrum with government users.

73 de Don

Don Dietz, N3KFH /TF8
Certified Electronics Technician,
   Communications Journeyman (ISCET) MD-250

Internet: n3kfh@centrum.is   Packet: n3kfh@tf3lj.isl.eu
          ddietz@rhi.hi.is   n3kfh@k4ry.#cenal.al.usa.noam

Coming to you direct from Keflavik, Iceland!

43. Re: [NETSIG:213] Re: TEKK radio mods

From: jkbe@aluxs.att.com (John Bednar)
Date: Mon, 7 Nov 94 08:10:12 EST
To: netsig@tapr.org
Message-ID: <9411071310.AA01048@lena>
Rendered body type: text/plain

>"These modifications are not for the TEKK model KS-960 (the radio in the
 >chrome case)."

Maybe better put...These modifications are *not* for the radio in the
chrome case. Sorry....

 >I'm confused; the 900 is the one in the black case, right?
Yes!

 > And the 960 is in the chrome case, yes?
Yes!

I think we should discuss the TEKK radio types based on the case and
drop the Mini/Micro/KS900/KS960...

44. Re: [NETSIG:222] Paccom Sprint2

From: jkbe@aluxs.att.com (John Bednar)
Date: Mon, 7 Nov 94 08:57:10 EST
To: netsig@tapr.org
Message-ID: <9411071357.AA01064@lena>
Rendered body type: text/plain

I have a Sprint which was used for a week with X1J with a 19.2 kbaud
diode matrix. (I tried it with *both* PacComm U14 mods.) On Friday night
I pulled it from service because of the large number of L1 RX
RS232 errors in the stats displays of the *other* nodes
in the stack. The Sprint display always had zero errors.

PacComm does not have a solution yet. I removed
the Sprint and replaced it with a TinyII MK2 and the stack is back

to normal operation.

This is not an isolated case because a sysop to my north is
having the same problems. I'm sure either PacComm, I, or someone
else will find a solution but I thought it was worth mentioning.

I like the TNC but the schematics are very poor. I hope everyone
complains as loudly as I have about the quality.

John, WB3ESS

45. Re: [NETSIG:226] Re: TEKK radio mods

From: crompton@nadc.nadc.navy.mil (D. Crompton)
Date: Mon, 7 Nov 94 11:27:22 -0500
To: netsig@tapr.org
Message-ID: <9411071627.AA12087@nadc.nadc.navy.mil>
Rendered body type: text/plain

I just received two TEKK radios and they came in a pink case!
What mods should I make on them?

Doug

46. Re: [NETSIG:228] Re: TEKK radio mods

From: Glenn Elmore <glenne@eagle.sr.hp.com>
Date: Mon, 7 Nov 1994 08:43:36 -0800 (PST)
To: netsig@tapr.org
Message-ID: <9411071643.AA08806@eagle.sr.hp.com>
Rendered body type: text/plain

>
> I just received two TEKK radios and they came in a pink case!
> What mods should I make on them?

Clearly you first need to paint them black or chrome! (:>)

Glenn Elmore n6gn

amateur IP: glenn@SantaRosa.ampr.org
Internet: glenne@sr.hp.com

47. Re: [NETSIG:228] Re: TEKK radio mods

From: hank_oredson@MENTORG.COM (Hank Oredson)
Date: Mon, 7 Nov 94 10:42:06 PST
To: netsig@tapr.org
Message-ID: <9411071042.ZM1543@hanko>
Rendered body type: text/plain

On Nov 7, 10:29am, D. Crompton wrote:
> Subject: [NETSIG:228] Re: TEKK radio mods
> I just received two TEKK radios and they came in a pink case!
> What mods should I make on them?
>
> Doug

These radios require re-painting or they will have a high BER.

Matte black is probably the best solution, but a bright chrome
finish has also been known to work.

Where did you get pink ones? I've seen the blue ones, and a
very small number of light yellow green ones, but never pink.

   ... Hank

--

Hank Oredson @ Mentor Graphics   Library Operations
Internet   : hank_oredson@mentorg.com   "Parts 'R Us!"
Amateur Radio: W0RLI@W0RLI.OR.USA.NOAM

48. Re: [NETSIG:227] Re: Paccom Sprint2

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Mon, 7 Nov 1994 12:16:29 -0700 (MST)
To: netsig@tapr.org
Message-ID: <Pine.SUN.3.90.941107121351.11969B-100000@kazak>

Rendered body type: text/plain

On Mon, 7 Nov 1994, John Bednar wrote:

>
> I have a Sprint which was used for a week with X1J with a 19.2 kbaud
> diode matrix. (I tried it with *both* PacComm U14 mods.) On Friday night
> I pulled it from service because of the large number of L1 RX
> RS232 errors in the stats displays of the *other* nodes
> in the stack. The Sprint display always had zero errors.
>
> PacComm does not have a solution yet. I removed
> the Sprint and replaced it with a TinyII MK2 and the stack is back
> to normal operation.
>
> This is not an isolated case because a sysop to my north is
> having the same problems. I'm sure either PacComm, I, or someone
> else will find a solution but I thought it was worth mentioning.
>
> I like the TNC but the schematics are very poor. I hope everyone
> complains as loudly as I have about the quality.
>
> John, WB3ESS
>
        Boy I do too! I hope the guy wanting to buy some number of Sprint
TNC's has read your note. Think I will call Pac-Comm now and ask what
they plan to do about the "bad news" Sprint...

        And THANKS JOHN!!!!

-karl

49. Use of the word "hacker" in Amateur Radio Newsline

From: bruce@pixar.com (Bruce Perens)
Date: Mon, 7 Nov 94 11:50 PST
To: netsig@tapr.org
Message-ID: <m0r4a5H-00063qC@mongo.pixar.com>
Rendered body type: text/plain

I was disappointed to see that the latest Amateur Radio Newsline used the
word "hacker" in a sense that meant "criminal". See newsline #895, article
"COMPUTER HACKER INDICTED". Here's a copy of the e-mail I sent the
publisher.

        Bruce Perens AB6YM

> From bruce Mon Nov 7 11:37:21 1994
To: 3241437@mcimail.com
Subject: Use of the word "hacker" in newsline

Bill,

Would it be possible for you to put a note in the Newsline writing
style guide? I'd appreciate if you would use the words "computer
criminal" instead of "hacker". There is more than one meaning for
"hacker", and many non-criminal programmers find it offensive when
"hacker" is used to mean "criminal".

        Many Thanks

        Bruce Perens AB6YM

50. Re: [NETSIG:228] Re: TEKK radio mods

From: dwolf@tcet.unt.edu (Dave Wolf)
Date: Mon, 7 Nov 94 15:09:42 CST
To: netsig@tapr.org
Message-ID: <9411072109.AA151220@tcet.unt.edu>
Rendered body type: text/plain

>
> I just received two TEKK radios and they came in a pink case!
> What mods should I make on them?
>
> Doug
>
>
First of all, paint the cases a more suitable color for amateur node
operation. I suggest camouflage. I'll leave the inside mods up to the
rest of the SIG. I run my TEKKs at 1200 baud. We're laid back in

Texas, except for the ROSE and TexNet backbones ;-).

Dave WO5H

51. Re: [NETSIG:230] Re: TEKK radio mods

From: Bob Wilkins <rwilkins@ccnet.com>
Date: Mon, 7 Nov 1994 17:58:45 -0800 (PST)
To: netsig@tapr.org
Message-ID: <Pine.3.89.9411071729.A684-0100000@ccnet>
Rendered body type: text/plain

On Mon, 7 Nov 1994, Hank Oredson wrote:

> On Nov 7, 10:29am, D. Crompton wrote:
> > Subject: [NETSIG:228] Re: TEKK radio mods
> > I just received two TEKK radios and they came in a pink case!
> > What mods should I make on them?
> >
> > Doug
>
> These radios require re-painting or they will have a high BER.
>
> Matte black is probably the best solution, but a bright chrome
> finish has also been known to work.
>
> Where did you get pink ones? I've seen the blue ones, and a
> very small number of light yellow green ones, but never pink.
>
>   ... Hank

The pink radios are being test marketed into areas that have a high
ambiant pink noise enviornment. It was found in extensive testing that the
matte black finish absorbed far too much pink noise causing an abnormal
BER at baud rates higher than 19200.

Why is it that hams no longer tune-up or tweak and peak a radio ? Is it
easier to modify ?

Bob   ;)

     Bob Wilkins   work   bwilkins@cave.org
 Berkeley, California   home   rwilkins@ccnet.com
     94701-0710   play   n6fri@n6eeg.#nocal.ca.usa.noam

52. Re: [NETSIG:228] Re: TEKK radio mods

From: jkbe@aluxs.att.com (John Bednar)
Date: Mon, 7 Nov 94 12:39:17 EST
To: netsig@tapr.org
Message-ID: <9411071739.AA01253@lena>
Rendered body type: text/plain

Doug,

Scratch the paint to see if they aren't cheap imitations
of the KS900, KS900N, KS900L, KS960, KS960L or KS960N.

What's the FCC ID?   #2848-UR-A-JOKER-18423

John

53. Re: [NETSIG:231] Re: Paccom Sprint2

From: jkbe@aluxs.att.com (John Bednar)
Date: Tue, 8 Nov 94 08:32:01 EST
To: netsig@tapr.org
Message-ID: <9411081332.AA01395@lena>
Rendered body type: text/plain

> On Mon, 7 Nov 1994, John Bednar wrote:
>
> >
> > I have a Sprint which was used for a week with X1J with a 19.2 kbaud
> > diode matrix. (I tried it with *both* PacComm U14 mods.) On Friday night
> > I pulled it from service because of the large number of L1 RX
> > RS232 errors in the stats displays of the *other* nodes
> > in the stack. The Sprint display always had zero errors.
> >
> > PacComm does not have a solution yet. I removed

> > the Sprint and replaced it with a TinyII MK2 and the stack is back
> > to normal operation.
> > ....(text deleted)
> > John, WB3ESS
> >
>   Boy I do too! I hope the guy wanting to buy some number of Sprint
> TNC's has read your note. Think I will call Pac-Comm now and ask what
> they plan to do about the "bad news" Sprint...
>
>   And THANKS JOHN!!!!
>
> -karl
>
>

NEWS!

I just got off the phone with Chuck at PacComm. They reproduced the
problem. The fix is to move Jumper JP17 to pins 1 & 2. The manual
tells you to use other pins. When you make this change the dual
color LED should be green most of the time. When data is being Rx'ed
this LED will go out. When transmitting data, the LED will turn
RED.

I am using X1J firmware with a diode matrix. Since CTS wasn't
being checked, this jumper change may help the ROSE users.

Soon as I can get to the node site I'll give this a try. The sysop
to the north has a node stack at home so he will be able to test this
tonight.

John, WB3ESS

54. Re: [NETSIG:228] Re: TEKK radio mods

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Tue, 8 Nov 1994 09:43:48 -0700 (MST)
To: netsig@tapr.org
Message-ID: <Pine.SUN.3.90.941108091307.25432A-100000@kazak>
Rendered body type: text/plain

On Mon, 7 Nov 1994, D. Crompton wrote:

> I just received two TEKK radios and they came in a pink case!
> What mods should I make on them?
>
> Doug
>
>
        Quickly paint them flat black and call them TEKK KS-900. Have you
looked inside yet Doug? And what did they cost now? I bought 4 KS-900
units when they were $89.00 a piece if you took the 441.05 MHz crystals.
Since we have no simplex bandplan in NM, I am using that frequency on
packet at 9600 baud...

        Try this: Fire them up from a 9 volt source. Using your DJ580
Handy Talky with a scope on the receiver output make a signal on
frequency. Set that as the center of the passband. Then make a signal 5
KHz low and note the deflection on the scope. Now make a signal 5 KHz
high and note that deflection. If the center of the passband is not the
center between deflections, then your radio isn't receiving on the right
frequency, or your radio is off frequency (not possible if you have a
DJ580). Tune the receiver so you have equal deflection and when you hit
the zero on your touchtone keypad you should see a sinewave that is for a
3 KHz deviation.
        If all that looks good then they will receive 9600 baud fine. If
not look at all that stuff about modifying the ones not set for data...hi

        The transmitter should make 2+ watts on the right frequency.

-karl

55. Re: [NETSIG:235] Re: TEKK radio mods

From: Tim Baggett <tim@nmsu.edu>
Date: Tue, 8 Nov 1994 10:22:16 -0700 (MST)
To: netsig@tapr.org
Message-ID: <Pine.3.87.9411081016.C29714-0100000@wilma>
Rendered body type: text/plain

Hello net dudes,

I have been trying to closely follow the TEKK radio mods, but so far things have only gotten confusing to me. So which radios need the mods? The Micro or the Mini? Are all Mini's painted black? Are all Micro's painted chrome? Does the pain color, radio type and the model number even remotely relate to each other? And I don't care if the radio is purple with yellow polka dots so long as I know what is inside, what to call it, and it runs at 9600 satisfactorily. From following the thread I first thought the Chrome Mini's need modified, then the black Mirco's were the ones that needed the posted mods, and now it seems that none of them need the mod.

Can someone clear this up for me? And when we're done getting my head on straight with this topic, we can try to clear me up on how the Mexican Revolution and the border problems greatly helped the US Army in preparation for WWI. Oh, sorry. Wrong exam.

73
Tim, AA5DF

New Mexico State University EE Student
Las Cruces, NM

56. [NETSIG:216] Re: TEKK Mods

From: mmunster@qualcomm.com (Marvin Munster x5388)
Date: Tue, 8 Nov 1994 10:08:59 -0700
To: netsig@tapr.org
Message-ID: <aae560c909021004ef44@[129.46.12.181]>
Rendered body type: text/plain

No response to below so far. Doesn't any one have a phone number of the supplier for TEKK radios in the instruction manuel? Sure would appreciate it.

(Sent earlier last week)
I have been watching all of this TEKK stuff with much interest. I do not know much about the TEKK radios. Could someone please post the phone number of the TEKK manufacturer (dealer, distributor, whatever). I'd like to get better informed.

Marvin - WB6PKK

57. Re: [NETSIG:239] Re: TEKK Mods

From: David Rush <rush@cacfs.ks.erg.sri.com>
Date: Tue, 08 Nov 94 12:56:42 -0600
To: netsig@tapr.org
Message-ID: <9411081856.AA00265@cacfs.ks.erg.sri.com>
Rendered body type: text/plain

>No response to below so far. Doesn't any one have a phone number of the
>supplier for TEKK radios in the instruction manuel? Sure would appreciate
>it.
>
>(Sent earlier last week)
>I have been watching all of this TEKK stuff with much interest. I do not
>know much about the TEKK radios. Could someone please post the phone
>number of the TEKK manufacturer (dealer, distributor, whatever). I'd like
>to get better informed.
>
>Marvin - WB6PKK

TEKK Data Division
800 521-TEKK
816 746-1098 (service)
816 746-1093 (fax)

TEKK Inc.
224 N.W. Platte Valley Dr
Kansas City MO 64150

David

58. RE: [NETSIG:237] Re: TEKK radio mods

From: Murphree Michael A <mamurphree@space.honeywell.com>
Date: Tue, 08 Nov 94 14:58:00 PST
To: netsig <netsig@tapr.org>
Message-ID: <2EBFF396@smtpdos.space.honeywell.com>

Rendered body type: text/plain

>>
>   Quickly paint them flat black and call them TEKK KS-900. Have you
>looked inside yet Doug? And what did they cost now? I bought 4 KS-900
>units when they were $89.00 a piece if you took the 441.05 MHz crystals.
>Since we have no simplex bandplan in NM, I am using that frequency on
>packet at 9600 baud...

Let's further confuse the issue... I pulled out my schematic for my TNET
Mini
(KS-960, Larger Chrome case, LED holes in the front, RSSI signal, 3W final,
works lousy out of the box on 9600, ad nauseum) and the identification
number
there was KS-900N!!!

I then pulled the TNET Micro (KS-900, Smaller Flat Black Case (pink in the
middle?), no RSSI, 5W final, works decent out of the box on 9600,
ad nausem again) manual and found again a KS-900 designation...

Seems Tekk doesn't even know what kind of radio they are manufacturing!

73
Mike, N4CNW

59. Re: [NETSIG:239] Re: TEKK Mods

From: jkbe@aluxs.att.com (John Bednar)
Date: Tue, 8 Nov 94 14:00:39 EST
To: netsig@tapr.org
Message-ID: <9411081900.AA01539@lena>
Rendered body type: text/plain

>
> No response to below so far. Doesn't any one have a phone number of the
> supplier for TEKK radios in the instruction manuel? Sure would appreciate
> it.
>
> (Sent earlier last week)
> I have been watching all of this TEKK stuff with much interest. I do not
> know much about the TEKK radios. Could someone please post the phone
> number of the TEKK manufacturer (dealer, distributor, whatever). I'd like
> to get better informed.
>
> Marvin - WB6PKK

I saw the reply go by either the same day or the next day of the original
post. I'll jot down the phone number tonight and post it. If you have
Dec 1993, Jan 1994, or Feb 1994, Tekk ran a full page ad in *one* of these
issues. It was within the first 10 pages from the front of the magazine.

John, WB3ESS

60. Re: [NETSIG:239] Re: TEKK Mods

From: tmoulton@ram.net
Date: Tue, 08 Nov 94 14:43:40 EST
To: netsig@tapr.org
Message-ID: <05680.15021573@RAMail>
Rendered body type: text/plain

>From: netsig@tapr.org (netsig (tapr))
>Date: Tue, 8 Nov 94 12:18 CST
>Reply-To: netsig@tapr.org
>Sender: netsig@tapr.org
>To: netsig@tapr.org
>Subject: [NETSIG:239] Re: TEKK Mods
>
>No response to below so far. Doesn't any one have a phone number of the
>supplier for TEKK radios in the instruction manuel? Sure would appreciate
>it.
>
>(Sent earlier last week)
>I have been watching all of this TEKK stuff with much interest. I do not
>know much about the TEKK radios. Could someone please post the phone
>number of the TEKK manufacturer (dealer, distributor, whatever). I'd like
>to get better informed.
>
>Marvin - WB6PKK

>
>

PacComm sells and supports them (813) 874-2980

61. TEKK Nomenclature

From: bruce@pixar.com (Bruce Perens)
Date: Tue, 8 Nov 94 12:29 PST
To: netsig@tapr.org, netsig@tapr.org
Message-ID: <m0r4xAc-0005HkC@mongo.pixar.com>
Rendered body type: text/plain

From: Murphree Michael A <mamurphree@space.honeywell.com>
> I pulled out my schematic for my TNET Mini and the identification
> number there was KS-900N.

The model number in the T-Net Mini service manual is incorrect. I did mention this in my first posting on TEKK Nomenclature. If you already own a radio, it's up to you to determine what modifications it needs. If you are about to purchase a radio, I can make it easier for you:

I haven't been able to find any reason for a radio amateur to purchase a KS-960. The KS-900 works acceptably well for 9600 right out of the box. The KS-900 may benefit from some small modifications, but these modifications are trivial compared to the major surgery proposed for the KS-960. The KS-960 runs hotter, has a lower-power final output transistor, is larger in size, and costs $10 more than the KS-900. The only known advantage of the KS-960 is that it has a S-meter output, but this output responds too slowly to make any practical use of it on packet. Buy a KS-900 instead.

Again, I am ignorant of the design-change history of these radios, and can not tell you what features are disabled in current models, and what modifications are necessary. I can, however, tell you that a new KS-900 works reasonably well as soon as you plug it in.

Thanks

Bruce Perens AB6YM

62. Re: [NETSIG:238] Re: TEKK radio mods

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Tue, 8 Nov 1994 15:01:43 -0700 (MST)
To: netsig@tapr.org
Message-ID: <Pine.SUN.3.90.941108145716.29706B-100000@kazak>
Rendered body type: text/plain

On Tue, 8 Nov 1994, Tim Baggett wrote:

> Hello net dudes,
>
> I have been trying to closely follow the TEKK radio mods, but so far
> things have only gotten confusing to me. So which radios need the mods?
> 73
> Tim, AA5DF
>
> New Mexico State University EE Student
> Las Cruces, NM

This Student is such a good Ham he can't read the many fine notes that I have saved for future use. I can answer his question from the top of my head but will not. He has locked me out of all his e-mail accounts so he wants not my help.

-karl k5di

63. Tekk Radios

From: <MITCHELL.T@OCF.compuserve.com>
Date: 08 Nov 94 17:27:06 EST
To: <netsig@tapr.org>
Message-ID: <OCF_3443-10893@CompuServe.COM>
Rendered body type: text/plain

*Message:
From: MITCHELL.T at CCPO.KCPO
Date: 11/8/94 3:57PM
To: INTERNET:netsig@tapr.org at OCF_INFORM
Subject: Tekk Radios

Contents:
Well I thought someone would get that info out, I guess I should
not have been lazy. Here it is...

Tekk Inc.
224 NW Parkway
Kansas City MO 64150

1-800-521-8355

I have worked with Tekk in the past and they are very good on service
and support. Recently I spoke with their data radio dude, and told them
of the interest that has been developing. They are very interested in the
comments good or bad on the products or things that you would want in a radio,
and the things you don't need.

I feel that we have got a GREAT oppertunity to work directly with the
factory on getting things fixed or developed. They were very interested in
this info and would work to get us modifications or fixes that would be
needed to make them work better.

What I would like to do, is get everyone on the netsig to develop a list
of things that you like or you want to change. Hopefully we can zero in on
a top 10 list. I will then run this info over to them with all the comments.
I am sure that this can be the beginning of great situation.

So, what do you want to know or like to have, not like, changes in design.
You name it open forum. Then lets try to focus on the things we can effect
change or get clarified.

Maybe we can take a vote or something.

Let me know what you think...

Thanks,

Tim Mitchell
KA5RYF/0

64. Re: [NETSIG:245] Re: TEKK radio mods

From: Tim Baggett <tim@nmsu.edu>
Date: Tue, 8 Nov 1994 15:41:43 -0700 (MST)
To: netsig@tapr.org
Message-ID: <Pine.3.87.9411081543.A6438-0100000@wilma>
Rendered body type: text/plain

On Tue, 8 Nov 1994, Klarsen wrote:

>
>
> On Tue, 8 Nov 1994, Tim Baggett wrote:
>
> > Hello net dudes,
> >
> > I have been trying to closely follow the TEKK radio mods, but so far
> > things have only gotten confusing to me. So which radios need the mods?
> > 73
> > Tim, AA5DF
> >
> > New Mexico State University EE Student
> > Las Cruces, NM
>
>   This Student is such a good Ham he can't read the many fine notes
> that I have saved for future use. I can answer his question from the top
> of my head but will not. He has locked me out of all his e-mail accounts
> so he wants not my help.
>
> -karl k5di

And your point being what?

Oh, and yes, UNIX daemons work pretty good on mail spool files huh?

Now, back to my question: Anyone know the scoop about which radios are
which? I'm looking for answers - not harassing goofs.

73
Tim, AA5DF

"The Student" (and damn proud of it too)

65. Certain Elmers are Best Avoided

From: bruce@pixar.com (Bruce Perens)
Date: Tue, 8 Nov 94 15:10 PST
To: netsig@tapr.org, netsig@tapr.org
Message-ID: <m0r4zga-0005prC@mongo.pixar.com>
Rendered body type: text/plain

Karl Larsen wrote:
> he wants not my help.

I don't blame him. Your touch-tone method of setting deviation wasn't
meant to be a joke, was it?

Thanks

Bruce Perens AB6YM

66. Re: [NETSIG:247] Re: TEKK radio mods

From: ron@chaos.eng.wayne.edu (Ron Atkinson)
Date: Tue, 8 Nov 1994 18:49:56 -0500 (EST)
To: netsig@tapr.org
Message-ID: <9411082349.AA20033@chaos.NIS.chaos>
Rendered body type: text/plain

My mailer said Tim Baggett said this:
>
> > of my head but will not. He has locked me out of all his e-mail accounts
> > so he wants not my help.   ^^^
> >   the magic word

> Now, back to my question: Anyone know the scoop about which radios are
> which? I'm looking for answers - not harassing goofs.

After all these discussions I popped off the cover of a TEKK radio here
that required the mod. It's the usual chrome case KS-960. When I first
tried 3 of these radios I got about 8-11 % thruput. After the mods were
done they were error free at 9600. I brought the radios to a friends
house to mod them (he had the tools for SMT work) and it took about 10
minutes for the first radio and 5 min for each other radio. Total time
for everything was just under 30 minutes to do 3 radios. This assumes
though that you have the right equipment, like a low wattage soldering
iron with a very small tip or one for SMT work.

The 3 TEKK's here are all KS-960 models with serial numbers in the 8000
range. The pc board itself has the designation:

     KS-960N
     KS-900N

Yes, it does have both of those numbers layed out that way on the board.

With 2 TEKK's talking to each other they run just great with about 5
for a txdelay, but I've run it down to 3 and I notice it starts to
occasionally miss a packet. 5 is always error free though. Amazingly
my Kenwood TM-731A dual-band performs right along with this thing
except the txd needs to be a bit higher (can run about 8-10) and it
decodes the TEKK's just fine when they run fast txdelays. It sure seems
to outperform Alinco radios running 9600 (havn't found an Alinco yet
that can decode me at 8 for a txd). But my Kenwood is just for home
packet use to goof around with.

Personally if I bought another one I'd just order a KS-900 TNET-Micro
after hearing from others on here. These radios work just fine though.

--

Ron N8FOW

AMPRnet : n8fow@n8fow.ampr.org
Internet : ron@chaos.eng.wayne.edu
           aa011@detroit.freenet.org

67. Re: [NETSIG:246] Tekk Radios

From: David Rush <rush@cacfs.ks.erg.sri.com>
Date: Tue, 08 Nov 94 18:36:15 -0600

To: netsig@tapr.org
Cc: rush
Message-ID: <9411090036.AA01456@cacfs.ks.erg.sri.com>
Rendered body type: text/plain

>What I would like to do, is get everyone on the netsig to develop a list
>of things that you like or you want to change. Hopefully we can zero in on
>a top 10 list. I will then run this info over to them with all the comments.
>I am sure that this can be the beginning of great situation.

Suggestion: include documentation with the shipped product! Mine came with
zip! I had to call 'em up to request info - they happily sent along a
service manual.

David

68. Re: [NETSIG:250] Re: Tekk Radios

From: Tim Baggett <tim@nmsu.edu>
Date: Tue, 8 Nov 1994 18:59:44 -0700 (MST)
To: netsig@tapr.org
Message-ID: <Pine.3.87.9411081844.A9609-0100000@wilma>
Rendered body type: text/plain

On Tue, 8 Nov 1994, David Rush wrote:

> Suggestion: include documentation with the shipped product! Mine came with
> zip! I had to call 'em up to request info - they happily sent along a
> service manual.

I agree with you on this David. I thought we were just lucky ;-)
I had to call and have them FAX the information to me. So I think this
is yet another possibility for error in the model number designators. I
ordered a mini, they could have shipped whatever 'similar' model they
had, then later I received documentation that 'seems' right, but has a
different designator.

It seems that we may have a radio here that needs a mod, but it is
working well (even with some in lab BER tests) so I'm tempted not to take
the soldering iron to it.

73
Tim, AA5DF

New Mexico State University EE Student
Las Cruces, NM

69. TEKK

From: Greg Jones <gjones@tenet.edu>
Date: Wed, 9 Nov 1994 00:03:06 -0600 (CST)
To: netsig@tapr.org (NETSIG mailing)
Message-ID: <199411090603.AAA26152@Kay-Abernathy.tenet.edu>
Rendered body type: text/plain

PSR thought.

Would someone be in a position to writeup an article for the January issue
of the TAPR PSR concerning the TEKK radio mods. Bascially take the various
threads posted on here in the last few weeks and organize something.

There are a lot of folks outside of the mail group that could benefit from
the collected information so far on the NETSIG.

Cheers - Greg

70. Re: [NETSIG:247] Re: TEKK radio mods

From: Greg Jones <gjones@tenet.edu>
Date: Wed, 9 Nov 1994 00:03:47 -0600 (CST)
To: netsig@tapr.org
Message-ID: <199411090603.AAA26164@Kay-Abernathy.tenet.edu>
Rendered body type: text/plain

Cut the crap guys.

greg

According to Tim Baggett:
>
> On Tue, 8 Nov 1994, Klarsen wrote:

71. without provocation

From: bruce@pixar.com (Bruce Perens)
Date: Tue, 8 Nov 94 22:57 PST
To: netsig@tapr.org, netsig@tapr.org
Message-ID: <m0r56y1-0005prC@mongo.pixar.com>
Rendered body type: text/plain

From: Greg Jones <gjones@tenet.edu>
> Cut the crap guys.

Don't be hard on the poor student. Karl picked on him without any
provocation that I could see. I even went back through old postings
looking for one in which he might have picked a fight, but I don't
see anything like that.

Bruce

72. Re: [NETSIG:239] Re: TEKK Mods

From: dwolf@tcet.unt.edu (Dave Wolf)
Date: Wed, 9 Nov 94 6:26:41 CST
To: netsig@tapr.org
Message-ID: <9411091226.AA171546@tcet.unt.edu>
Rendered body type: text/plain

TEKK
226 NW Parkway
Kansas City, MO 64150
800-521-8355
816-746-1098

73. RE: [NETSIG:250] Re: Tekk Radios

From: ESTEY@SKYLER.MAVD.HONEYWELL.COM
Date: Wed, 9 Nov 1994 11:46:34 -0600 (CST)
To: netsig@tapr.org
Message-ID: <941109114634.33208f2c@SKYLER.MAVD.HONEYWELL.COM>
Rendered body type: text/plain

For the past year I have been selling TEKK data radios, PacComm TNCs, and
various books at area hamfests. My intent has been to make available -
and support - products that the traditional Amateur Radio Dealer won't
handle because they are either too specialized or represent too small a
demand. The profit margins are very small - even at a small regional
show I loose money even though my helper and I don't get paid.

Frankly, when TEKK ran the ad in QST they cut their dealers off right at
the knees. We cannot afford to support the product locally for a ten dollar
bill - and that's what their "direct to the amateur pricing" did! For the
technically inclined, which most on this SIG are, the local services may
not be necessary. But for the "masses" out there who can barely spell "RF"
and "digital" having someone locally put the radios on frequency, cable and
test them becomes essential. If you want to see high speed operations grow,
then dealer support is essential.

With the increased TEKK "direct to Amateur" prices maybe we can afford to
deal with the TEKK. Time will tell that. Recently I had a local ham tell me
that he ordered the radio from TEKK because my price was ten bucks more -
even though I had them "on the shelf". So why should I bother .... I'm
thinking on that ....

I have been reluctant to address this question here since it is of a commercial nature but, if we really
 wish to have off-the-shelf high-speed radios then
it is something that needs to be considered.

Carl - WA0CQG

74. Re: [NETSIG:232] Use of the word "hacker" in Amateur Radio Newsline

From: nielsen@PrimeNet.Com (Bob Nielsen)
Date: Wed, 09 Nov 1994 20:15:54 -0700
To: netsig@tapr.org
Message-ID: <199411100315.UAA12457@news.primenet.com>
Rendered body type: text/plain

>I was disappointed to see that the latest Amateur Radio Newsline used the
>word "hacker" in a sense that meant "criminal". See newsline #895, article
>"COMPUTER HACKER INDICTED". Here's a copy of the e-mail I sent the
>publisher.
>
>   Bruce Perens AB6YM

Let's come out with a "Proud to be a hacker" t-shirt.

Bob Nielsen, W6SWE
Tucson, AZ
nielsen@primenet.com

75. Re: [NETSIG:252] TEKK

From: "Andrew Kukla" <ve3mrm@ve3mrm.ampr.org>
Date: Wed, 9 Nov 94 22:40:00 EST
To: netsig@tapr.org
Message-ID: <88.ve3mrm@ve3mrm.ampr.org>
Rendered body type: text/plain

> Would someone be in a position to writeup an article for the January issue
> of the TAPR PSR concerning the TEKK radio mods. Bascially take the various
> threads posted on here in the last few weeks and organize something.

What is the TAPR PSR? Could I subscribe it or download?

==
AmprNet: ve3mrm%ve3mrm.ampr.org@bbs.ve3rpi.ampr.org   Andrew Kukla
IP address: 44.135.88.38   o   Toronto, Ontario
AX.25 mail: VE3MRM @ VA3BBS.#SCON.ON.CAN.NOAM   (□)   73
== □ ==================

76. Re: [NETSIG:238] Re: TEKK radio mods

From: jkbe@aluxs.att.com (John Bednar)
Date: Wed, 9 Nov 94 11:07:18 EST
To: netsig@tapr.org
Message-ID: <9411091607.AA02169@lena>
Rendered body type: text/plain

Tim,

Here is the scoop on the Tekk mods. I am the author of the mods
and original postee.

John, WB3ESS

PS:
Does anyone want to work on a Tekk (19.2 k or 38.2 k) mod? I haven't
done much work but having a buddy or two might keep the
project moving. My internet address is aljkbe@attme.att.com.

==

The older style radio has a black case that only has a top
cover. If you make these mods to the radio you will find an
improvement in 9600 bps operation. Yes, the radio works right
out of the box, but you *will* see an improvement by adding two
caps and one resistor. It's a very simple mod I can't understand
why some readers are grumping. The modification was developed because
this radio was not developed for 9600 bps service and I wasn't
happy with the stock performance.

TEKK KS-900L Receiver Modification (black case with only a top cover)

The KS900 recovered audio has a high frequency (2.2MHz) signal
superimposed on the recovered audio. This high frequency signal
causes jitter in the sliced output. To eliminate the unwanted
signal, install a lowpass RC filter in the audio signal line
with a corner frequency well above the frequencies of interest.

The modification: At the 9-pin interface connector add a 2.7k
ohm resistor in series with the wire going to connector pin 5.
Next, solder a 0.001uf capacitor between pin 2 and pin 5 of
the same connector.

TEKK KS-900L Transmitter Modification (black case with only a top cover)

The stock KS900 transmit modulation response is not flat from
"dc to 7.2 Khz". To correct this deficiency, the input coupling
capacitor must be increased in value. I have found it easier to

solder in the additional capacitor without removing the board
from the case.

The modification: Solder a 3.3uf tantalum capacitor (observe
the polarity) in parallel with capacitor C31. The transmit
requirements are not changed so re-adjusting the transmit
level will not be required.

==========

==========

The newer style radio has a chrome case. It uses chip components
and the case has a top and bottom cover. The model numbering of
this radio is very confusing. When these radio's were originally
shipped, the thruput at 9600 bps was poor but they also worked out
of the box (much worse than the older style radio).

If you make these mods to the radio you will find an improvement
in 9600 bps operation. This modification is a little more
detailed but don't let the quanity of text prevent you from performing
the change.

Now here is the interesting part. I released the modification to Tekk
around early January 1994. Naturally, it has found it's way to the
other suppliers of Tekk radio's. Based on cooerspondence I believe that
some suppliers are *not* making all the modifications. If you want
the maximum performance at 9600 bps and near identical frequency response
to the older style radio, I contend that all modifications must
be completed. It is possible to complete some of the modifications
and see a dramatic improvement in performance *but* with all the
changes, performance will improve.

I would expect by now that Tekk is shipping radio's that work *well*
out of the box. There is no need to stay away from this radio on a
frequency response standpoint. Someone mentioned RF transistor concerns
a few days ago. So please factor this into your purchase.

TEKK KS-960L Receiver Modification

The un-modified KS960 recovered audio is attenuated by
a single pole RC filter on the receiver output. The roll-
off begins around 1200hz in an unmodified radio. Please
note that a simple low-pass filter is required to eliminate
a high frequency (2.2MHz) conversion product. The solution
is to move the corner frequency of this RC filter well
above the frequencies of interest.

The modification: Remove chip capacitor C18 and replace
it with a 0.001uf leaded capacitor or chip capacitor.

TEKK KS-960L Transmitter Modification

The un-modified KS960 transmitter suffers from several
problems. First, this radio contains an input amplifier,
a limiter, and a reconstruction filter in the input of the
transmit section. Secondly, the modulator frequency response
is not not flat from "dc to 7.2 Khz".

The solution is to bypass and ground the input to
the existing limiter circuit and to modify the modulator
to achive a flat frequency response.

The modification:
1) Remove the wire attached to pin 4 of the 9-pin connector and
solder it to ground.
2) Solder the (+) lead of a 10uf tantalum capacitor with 0.2"
leads to the 9-pin connector - pin 4.
3) Prepare a 1.8" piece of wire with 0.2" ends and solder one end
of the wire to the (-) lead of the capacitor added in step 2.
Tuck the other end of the wire around the circuit board in the
corner. Don't use the corner where the BNC is mounted.
4) Locate the junction of C43, C92, and R41. Form the wire, trim
the end to 0.1" and solder it carefully to this junction.
5) Locate the junction of R43 and C47. Carefully remove the

solder from that solder pad. With a sharp knife cut the trace
diagonally between R43 and C47. Check your cut with an ohm
meter to insure that the trace is open. If you break R43, C47,
C48 or C49 don't worry because these parts are no longer used.
6) Locate potentiometer VR1 and turn it fully CW.
7) Re-adjust the transmit frequency and the transmit deviation.

77. Re: [NETSIG:257] Re: Use of the word "hacker" in Amateur Radio Newsline

From: Jim Neely <jneely@tenet.edu>
Date: Thu, 10 Nov 1994 05:48:27 -0600 (CST)
To: netsig@tapr.org
Message-ID: <199411101148.FAA26488@Joyce-Perkins.tenet.edu>
Rendered body type: text/plain

According to Bob Nielsen:
>
> >I was disappointed to see that the latest Amateur Radio Newsline used the
> >word "hacker" in a sense that meant "criminal". See newsline #895, article
> >"COMPUTER HACKER INDICTED". Here's a copy of the e-mail I sent the
> >publisher.
> >
> >   Bruce Perens AB6YM
>
>
> Let's come out with a "Proud to be a hacker" t-shirt.
>
> -------
> Bob Nielsen, W6SWE
> Tucson, AZ
> nielsen@primenet.com
>

How about "Hacker Trash and PROUD of it"?

Jim Neely
WA5LHS

78. Re: [NETSIG:259] Re: TEKK radio mods

From: tmoulton@ram.net
Date: Thu, 10 Nov 94 07:39:14 EST
To: netsig@tapr.org
Message-ID: <05703.15021573@RAMail>
Rendered body type: text/plain

>From: netsig@tapr.org (netsig (tapr))
>Date: Thu, 10 Nov 94 00:35 CST
>Reply-To: netsig@tapr.org
>Sender: netsig@tapr.org
>To: netsig@tapr.org
>Subject: [NETSIG:259] Re: TEKK radio mods
>
>
>Tim,
>
>Here is the scoop on the Tekk mods. I am the author of the mods
>and original postee.
>
>John, WB3ESS
>
>PS:
>Does anyone want to work on a Tekk (19.2 k or 38.2 k) mod? I haven't
>done much work but having a buddy or two might keep the
>project moving. My internet address is aljkbe@attme.att.com.
>

I think PacComm has done atleast 19.2kb. that would be a fair starting point.

tom, w2vy

79. Re: [NETSIG:260] Re: Use of the word "hacker" in Amateur Radio Newsline

From: "William L. Barnes" <wlbarn@planetx.bloomu.edu>
Date: Thu, 10 Nov 1994 08:52:29 -0500 (EST)
To: netsig@tapr.org
Cc: netsig@tapr.org
Message-ID: <Pine.SUN.3.90.941110085021.3130B-100000@planetx>
Rendered body type: text/plain

On Thu, 10 Nov 1994, Jim Neely wrote:

> > Let's come out with a "Proud to be a hacker" t-shirt.
> How about "Hacker Trash and PROUD of it"?

Or even better:
"Just say no to Hacking!"

except when you have to hack that Sprint tnc to get it go 19.2k... {Grin}

73, de Bill, N3JIX
```
*********************************************************************
* Bill Barnes, N3JIX                    * Bloomsburg Unviersity     *
* Internet:  wlbarn@planetx.bloomu.edu  * Bloomsburg, Pa            *
* Packet  :  n3jix@n3jix.#epa.pa.usa.noam                           *
*********************************************************************
```

80. Re: [NETSIG:258] Re: TEKK

From: nielsen@PrimeNet.Com (Bob Nielsen)
Date: Thu, 10 Nov 1994 11:42:30 -0700
To: netsig@tapr.org
Message-ID: <199411101842.LAA05892@news.primenet.com>
Rendered body type: text/plain

>What is the TAPR PSR? Could I subscribe it or download?

PSR is Packet Status Register, the TAPR quarterly newsletter. It is
included with membership in TAPR. For those who don't already belong,
membership in TAPR supports this SIG mailing list, for instance (plus a lot
more)! There has been some discussion on archiving past issues on the
tapr.org server, but I don't know where this stands (Maybe Greg will comment).

Membership is $15.00 per year in the U.S., $18.00 (U.S. funds) in Canada and
Mexico and $25.00 elsewhere. VISA and MasterCard are accepted. Contact:

Tucson Amateur Packet Radio
8987-309 E. Tanque Verde Rd. #337
Tucson, AZ 85715-9399

Bob Nielsen, W6SWE
Tucson, AZ
nielsen@primenet.com

81. a few questions on the pi2 card

From: Doug Holcombe <holcombe@mc.edu>
Date: Thu, 10 Nov 1994 14:30:22 +0600 (CST)
To: tcp-group@ucsd.edu, nos-bbs@hydra.carleton.ca, bm@hydra.carleton.ca,
        netsig@tapr.org
Message-ID: <Pine.3.05.9411101422.A321-b100000@csc.mc.edu>
Rendered body type: text/plain

I didn't know which group this message should go to so I just thought that
Kit would get a responce from one of these.

I'm looking at buying a Ottawa PI2 card and I have a few questions
swimming around in my head. Can I put a Kantronics DE-19K2/9K6 (19.2k/9600
baud modem) on the low-speed port and get it to work or does it have to go
on the high speed port? or will that modem work on the card at all? If it
will work on the card will the modem still do the 19.2k that kantronics
says that it will do in the data engine with the D4-10 data radio that
they sell? if this type of modem doesn't work at all with this PI2 Card
then what type of modems are there that will work for this card. I'm
looking to do 9600 baud right now and then move up to 56k! later on.
are there any other types of modems (kits or pre-assemabled) that can go
faster than 9600?
I thank you for any information that will come my way, so I can get on the
air with a fast packet.

Doug Holcombe, KB5YZI   inet: holcombe@mc.edu
Mississippi College   (601)894-5210
Clinton, MS 39058

82. Re: [NETSIG:263] Re: TEKK

From: Greg Jones <gjones@tenet.edu>
Date: Thu, 10 Nov 1994 16:01:05 -0600 (CST)
To: netsig@tapr.org
Message-ID: <199411102201.QAA04668@Kay-Abernathy.tenet.edu>
Rendered body type: text/plain

According to Bob Nielsen:

Thanks for the info Bob. I am getting buried at school currently. :-)

> >What is the TAPR PSR? Could I subscribe it or download?
>
> PSR is Packet Status Register, the TAPR quarterly newsletter. It is
> included with membership in TAPR. For those who don't already belong,
> membership in TAPR supports this SIG mailing list, for instance (plus a lot
> more)! There has been some discussion on archiving past issues on the
> tapr.org server, but I don't know where this stands (Maybe Greg will comment).

Yeah - Bob Hansen (PSR editor) sends me the text version of the issue about
1 or 2 qtrs after it has been printed and then it is put up on the listserv.
Send mail to listserv@tapr.org with a message of index -all

We hit our membership goal of 2000+ members in Oct (which doubles the
membership from January) and can only look forward to having more members in
the future!

> Membership is $15.00 per year in the U.S., $18.00 (U.S. funds) in Canada and
> Mexico and $25.00 elsewhere. VISA and MasterCard are accepted. Contact:

Like Bob said, membership in TAPR supports all the things we do...ie
supporting the SIGs, publications, R&D, newsletter, running the office,
going to conventions and a lot more!

> Tucson Amateur Packet Radio
> 8987-309 E. Tanque Verde Rd. #337
> Tucson, AZ 85715-9399

Office (817) 383-0000
Fax (817) 566-2544

Cheers - Greg

83. More NEDA ????

From: <MITCHELL.T@OCF.compuserve.com>
Date: 10 Nov 94 18:02:35 EST
To: <netsig@tapr.org>
Message-ID: <OCF_3443-17009@CompuServe.COM>
Rendered body type: text/plain

*Message:
From: MITCHELL.T at CCPO.KCPO
Date: 11/10/94 4:26PM
To: INTERNET:netsig@tapr.org at OCF_INFORM
Subject: More NEDA ????
Contents:
I still have not been able to get any feedback from NEDA. I guess
everyone is busy. Does anyone know if it is $15 for membership?

As soon as I make contact Greg I will let you know....

Tim Mitchell
KA5RYF

84. (no subject)

From: cbremmer@fergus.cfa.org
Date: Thu, Nov 10, 1994 08:27:49 PM PST
To: netsig@tapr.org
Message-ID: <9411110144.AA10550@fergus.cfa.org>
Rendered body type: text/plain

unjoin netsig

85. Re: [NETSIG:258] Re: TEKK

From: dwolf@tcet.unt.edu (Dave Wolf)
Date: Thu, 10 Nov 94 22:11:53 CST
To: netsig@tapr.org
Message-ID: <9411110411.AA188308@tcet.unt.edu>
Rendered body type: text/plain

>
> > Would someone be in a position to writeup an article for the January issue
> > of the TAPR PSR concerning the TEKK radio mods. Bascially take the various
> > threads posted on here in the last few weeks and organize something.

>
> What is the TAPR PSR? Could I subscribe it or download?
> == P ==================
>
>
The PSR is the quarterly journal of Tucson Amateur Packet Radio. It is
included with your membership. $15/year. TAPR's office number is
(817)383-0000.

Dave WO5H

86. Re: [NETSIG:248] Certain Elmers are Best Avoided

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Fri, 11 Nov 1994 07:17:15 -0700 (MST)
To: netsig@tapr.org
Message-ID: <Pine.SUN.3.90.941111070546.10835A-100000@kazak>
Rendered body type: text/plain

On Tue, 8 Nov 1994, Bruce Perens wrote:

> Karl Larsen wrote:
> > he wants not my help.
>
> I don't blame him. Your touch-tone method of setting deviation wasn't
> meant to be a joke, was it?
>
>   Thanks
>
>   Bruce Perens AB6YM
>
       Bruce the touch-tone method of setting deviation is not a joke. I
first took my ht to a service monitor and had it's touch-tone deviation
measured (it is almost exactly 3 KHz). I then calibrate my scope image
in terms of p-p deflection with the ht making 3 KHz sinewaves. Then I
look at the signals I am connected to and note their deflection. Using
this method I discovered that the mountain-top node has a 1 KHz deviation
now and I will get up there on Monday next to fix it.

       I should say the scope is connected to the Tekk receiver audio output
line. Any DC scope will work. This is as accurate as it gets Bruce. The
only thing better is a $12,000.00 service monitor...

-karl

87. Re: [NETSIG:264] a few questions on the pi2 card

From: Glenn Elmore <glenne@eagle.sr.hp.com>
Date: Fri, 11 Nov 1994 07:51:04 -0800 (PST)
To: netsig@tapr.org
Message-ID: <9411111551.AA10708@eagle.sr.hp.com>
Rendered body type: text/plain

Doug Holcombe, KB5YZI wrote:
>
> I'm looking at buying a Ottawa PI2 card and I have a few questions
> swimming around in my head. Can I put a Kantronics DE-19K2/9K6 (19.2k/9600
> baud modem) on the low-speed port and get it to work or does it have to go
> on the high speed port?

  We are running Ottawa PI2 cards on the 230 kbps backbone here. One of
the hilltop sites also has several other ports on the JNOS host. For a
short while, we tried to run a 1200 bps radio on the slow port while
running higher speed on the fast. We discovered that the fast port
ended up going deaf quite often, apparantly associated with traffic on
the slow port but the precise relationship and cause hasn't yet been
figured out.

  I haven't seen the Kantronics radio but the PI card can either use
external clocking or do its own internal recovery from the bit stream,
even at 230 kbps if you use my s/w hacks. I should think it would work
very well on the Kantronics radio. Furthermore, because the cards are
DMA, the system performance isn't compromised by a PC host having to run
character by character interrupt and further slowing and loading things
down.

> they sell? if this type of modem doesn't work at all with this PI2 Card
> then what type of modems are there that will work for this card. I'm
> looking to do 9600 baud right now and then move up to 56k! later on.
> are there any other types of modems (kits or pre-assemabled) that can go
> faster than 9600?

I think you'll find that the PI card works fine for this. I guess I'd ask "what *don't* they work with?".At the moment, we are still experiencing some problems which seem associated with the PI driver software which has caused the highspeed port "deafness" and crashes. This has required that JNOS be run with frequent h/w and/or s/w resets and we are not now operating with the slow ports at all. OTOH, a lot of data is flowing across the system.

Try traceroute or hop check to santarosa.ampr.org. Hopefully it will terminate normally (if it stops at redwood3, the PI card on redwood2 may be deaf) and you'll see the last three hops work quite well. All radios are using PI2 cards. You may also try 'finger pishow@<host>' where <host> is one of redwood3, redwood,santarosa,k6hsj, to see the current status of the PI2 card. This also works on redwood2 but please avoid this since it is floppy based and the finger causes an extra disk write (for logging). I really don't want to generate any more trips to the hill than are necessary. It's looking like we're going to have to spring for a hard drive there as it is.

I like the PI2 card pretty well and think it is a great choice for higher speed packet. Of course I'll like it even better when simultaneous correct operation of slow (interrupt) and fast (DMA) ports is a reality (:>) Perhaps the solution to these problems will even enable slow port operation at 9600 bps on 'reasonable' hosts (386 class or better). That would make them an awfully attractive alternative to almost any TNC2-like solution since the fastport and DMA would then come "for free" and allow an upgrade path as you suggest.

73
Glenn Elmore n6gn

amateur IP: glenn@SantaRosa.ampr.org
Internet: glenne@sr.hp.com

88. Re: [NETSIG:269] Re: Certain Elmers are Best Avoided

From: Sperry Davis <sperry@pinn.net>
Date: Fri, 11 Nov 1994 12:49:14 -0500 (EST)
To: netsig@tapr.org
Message-ID: <Pine.3.89.9411111208.B24851-0100000@everest>
Rendered body type: text/plain

On Fri, 11 Nov 1994, Klarsen wrote:

> Bruce the touch-tone method of setting deviation is not a joke. I
> first took my ht to a service monitor and had it's touch-tone deviation
> measured (it is almost exactly 3 KHz). I then calibrate my scope image
> in terms of p-p deflection with the ht making 3 KHz sinewaves. Then I
> look at the signals I am connected to and note their deflection. Using
> this method I discovered that the mountain-top node has a 1 KHz deviation
> now and I will get up there on Monday next to fix it.
>
> I should say the scope is connected to the Tekk receiver audio output
> line. Any DC scope will work. This is as accurate as it gets Bruce. The
> only thing better is a $12,000.00 service monitor...
>
> -karl
>

Karl,
I have used a modified version of your method for years and it is very accurate. Instead of using the touch tones to calibrate the scope, I use a ht that can transmit 5khz above the frequency you are using and 5khz below. Using the variable gain control on the scope set the +-5 signals to convient graticle marks. My scope sets up to +-3 divisions to indicate the +-5KHz offsets. Then a packet signal filling 4 divisions on the scope is at 3.333khz deviation.
I once had an FCC engineer tell me that this was exactly the method they use to calibrate their deviation monitoring equipment. Of course this assumes that the monitored discriminator is somewhat linear and you are dc coupled.
I keep a modified Bearcat scanner on the workbench just for deviation monitoring. Just tap onto pin 9 of the receiver IF chip, just like you would do when modifing a rig for 9600 baud use, and run it out to a chassis mounted bnc connector. Works great! It is very convincing to show a new packet users that their poor results are because of over deviation and the resulting square waves being transmitted on 1200 baud.

Sperry/n4sd

n4sd.ampr.org [44.62.64.40]
sperry@pinn.net

89. PI + BPQ?

From: Sperry Davis <sperry@pinn.net>
Date: Fri, 11 Nov 1994 12:51:28 -0500 (EST)
To: netsig@tapr.org
Message-ID: <Pine.3.89.9411111234.C24851-0100000@everest>
Rendered body type: text/plain

Can the PI card be used with BPQ node software?

Sperry/n4sd
InterNet: sperry@pinn.net
Amprnet: n4sd.ampr.org [44.62.64.40]
PBBS: N4SD@WD4MIZ.#TIDE.VA.USA.NOAM

90. Re: [NETSIG:246] Tekk Radios

From: jkbe@aluxs.att.com (John Bednar)
Date: Fri, 11 Nov 94 12:40:46 EST
To: netsig@tapr.org
Message-ID: <9411111740.AA02892@lena>
Rendered body type: text/plain

> From: MITCHELL.T at CCPO.KCPO
> Date: 11/8/94 3:57PM
>
> They are very interested in the
> comments good or bad on the products or things that you would want in a radio,
> and the things you don't need.
>
> I feel that we have got a GREAT oppertunity to work directly with the
> factory on getting things fixed or developed. >
> Tim Mitchell
> KA5RYF/0

In this order:

#1. Develop a 900 Mhz "data" radio with better frequency stability
than the current design, better front end rx filtering, and
with great out of the box performance. Offer two models
9600 bps and 19.2 kbps. Power range in the 3-5 watt region
would be fine.

#2. Improve the existing models for better
frequency stability than the current design, better front end
rx filtering, great out of the box performance, and slightly
wider receive filters.

John, WB3ESS

91. Re: [NETSIG:273] Re: Tekk Radios

From: Glenn Elmore <glenne@eagle.sr.hp.com>
Date: Fri, 11 Nov 1994 14:02:45 -0800 (PST)
To: netsig@tapr.org
Message-ID: <9411112202.AA11871@eagle.sr.hp.com>
Rendered body type: text/plain

>From John, WB3ESS
>
> In this order:
>
> #1. Develop a 900 Mhz "data" radio with better frequency stability
> than the current design, better front end rx filtering, and
> with great out of the box performance. Offer two models
> 9600 bps and 19.2 kbps. Power range in the 3-5 watt region
> would be fine.

I would highly suggest *not* using 900 MHz. How about 1200 instead?
It costs only a little more for the same power, in that power range,
and doesn't suffer from the terrible and increasing Part 15 polution.
902-928 in the US is a garbage band. It isn't even available for
amateur use most other places.
My own opinion is that 1 watt tx power is probably more cost
effective. If the path isn't good, 3-10 dB isn't going to help. It's
better to put two lowcost radios in the path than try to jam through
with only transmit power to help. Multipath comes up at about the same

time that LOS goes away and makes things even worse.

>
> #2. Improve the existing models for better
>   frequency stability than the current design, better front end
>   rx filtering, great out of the box performance, and slightly
>   wider receive filters.

How about starting over? It's probably easier unless Tekk is really
open to working with amateurs.

Just my opinions....

Glenn Elmore n6gn

amateur IP: glenn@SantaRosa.ampr.org
Internet: glenne@sr.hp.com

92. Re: [NETSIG:273] Re: Tekk Radios

From: Tim Baggett <tim@nmsu.edu>
Date: Fri, 11 Nov 1994 14:56:53 -0700 (MST)
To: netsig@tapr.org
Message-ID: <Pine.3.87.9411111453.C24932-0100000@wilma>
Rendered body type: text/plain

On Fri, 11 Nov 1994, John Bednar wrote:

> > I feel that we have got a GREAT oppertunity to work directly with the
> > factory on getting things fixed or developed. >
> > Tim Mitchell
>
> #1. Develop a 900 Mhz "data" radio with better frequency stability

I wouldn't like to see a new radio designed at 900 MHz (although I'm sure
we're a minority). Due to White Sands Missle Range, we cannot transmit on
the 900 MHz band (and a good chuck of 70 cm - 420-430) so a 900 MHz rig
wouldn't do us any good, hihi.

Everything else you mentioned sounds great to me! I would like more RF power.

We were all set and ready to run 900 MHz equip for the June VHF/UHF
contest when we discovered this. Boy, had we not found out we probably
would have received a FCC QSL when we sent out logs in, hihi! So we stuck
with 6M, 2M, 440, 10 ghz, and lasers (fan modulated CW!) (tnx ke5ci!)

73
Tim, AA5DF

New Mexico State University EE Student
Las Cruces, NM

93. Inexpensive dev meter

From: Jack Taylor <n7oo@huachuca-emh8.army.mil>
Date: Fri, 11 Nov 94 14:58:08 MST
To: netsig@tapr.org
Message-ID: <m0r647e-0001ZQC@dptspd.sat.datapoint.com>
Rendered body type: text/plain

Sperry N4SD commented about his modified bearcat scanner being used with a
scope for deviation measurments. I too have used this technique for many
years with good results. AC coupled like Karl K5DI suggested with the
TEKK will do a nice job on deviation. DC coupled as Sperry suggests will
give BOTH frequency and deviation indications. Just by glancing at the
scope, one can tell right away whether a CARRIER is on or off frequency and
by how much.

Just about everyone now has a scanner in the shack and this is a convenient
way for a network manager to keep tabs on those nodes he is capable of
receiving. Other than figuring out how to DC couple to your particular
scanner, the major point is to have a reasonably trusted calibration source
at hand with which to check and set the scope amplitude.

I use an old HP-130 scope for this purpose. It has a 5 inch screen is
quite obsolute by todays standards, and as a result can be found cheaply.
       ^ obsolete

73 de Jack

94. Re: [NETSIG:271] Re: Certain Elmers are Best Avoided

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Fri, 11 Nov 1994 15:46:58 -0700 (MST)
To: netsig@tapr.org
Message-ID: <Pine.SUN.3.90.941111154153.17895A-100000@kazak>
Rendered body type: text/plain

On Fri, 11 Nov 1994, Sperry Davis wrote:

>
> On Fri, 11 Nov 1994, Klarsen wrote:
>
> > >   Bruce the touch-tone method of setting deviation is not a joke. I

        My stuff removed.....

>
> Karl,
>   I have used a modified version of your method for years and it is
> very accurate. Instead of using the touch tones to calibrate the scope,
> I use a ht that can transmit 5khz above the frequency you are using and
> 5khz below. Using the variable gain control on the scope set the +-5
> signals to convient graticle marks. My scope sets up to +-3 divisions to
> indicate the +-5KHz offsets. Then a packet signal filling 4 divisions on
> the scope is at 3.333khz deviation.

        I and Roy Gould are now using the plus/minus 5 KHz idea and it
works just great! I was afraid to explain that method for fear they will
all think it a joke...hi

>   I once had an FCC engineer tell me that this was exactly the method
> they use to calibrate their deviation monitoring equipment. Of course
> this assumes that the monitored discriminator is somewhat linear and you
> are dc coupled.
>   I keep a modified Bearcat scanner on the workbench just for deviation
> monitoring. Just tap onto pin 9 of the receiver IF chip, just like you
> would do when modifing a rig for 9600 baud use, and run it out to a
> chassis mounted bnc connector. Works great! It is very convincing to
> show a new packet users that their poor results are because of over
> deviation and the resulting square waves being transmitted on 1200 baud.
>
> Sperry/n4sd
>   n4sd.ampr.org [44.62.64.40]
>   sperry@pinn.net
>
        I will frequent the hock shops and find a good big so it can be
modified scanner and do as you say. That is a great tool to add to my
collection...

-karl k5di

95. Re: Tekk Radios

From: dkelly@nebula.tbe.com (david kelly)
Date: Fri, 11 Nov 94 17:57:49 -0600
To: netsig@tapr.org
Message-ID: <9411112357.AA09143@nebula.tbe.com>
Rendered body type: text/plain

> #2. Improve the existing models for better
>   frequency stability than the current design, better front end
>   rx filtering, great out of the box performance, and slightly
>   wider receive filters.

Is anyone familiar with any other design that uses thermistors for
frequency compensation of crystal oscillators? Maybe my ignorance
is showing, but seems like crystals are more stable and better
characterized than thermistors. And TEKK uses a couple of 'em in
their radios.

And if we are going to start with a clean sheet of any kind,
lets do spread spectrum at some interesting data rates.

73, David N4HHE
dkelly@nebula.tbe.com

96. Re: [NETSIG:278] Re: Tekk Radios

From: "Kenneth F. Jones" <0003672208@mcimail.com>
Date: Sat, 12 Nov 94 00:05 EST
To: netsig <netsig@tapr.org>
Message-ID: <94941112050549/0003672208NA4EM@MCIMAIL.COM>
Rendered body type: text/plain

Thermistors as cheap and dirty temperature compensation have been
around for a while... the only documented difference between the old
Wilson Mark series VHF handheld for Amateur and the Regency Micro-Com
commercial set was a thermistor on the TX oscillator for the type
accepted commercial one. That thermistor was probably the most
expensive component on the market at the time, given the retail
difference between the two otherwise identical radios.

All rocks drift. Compensate.

Chers,
Ken Jones, KB3JA

97. Re: [NETSIG:272] PI + BPQ?

From: Barry McLarnon VE3JF <bm@hydra.carleton.ca>
Date: Sat, 12 Nov 1994 23:34:08 -0500 (EST)
To: netsig@tapr.org
Message-ID: <199411130434.XAA22956@hydra.carleton.ca>
Rendered body type: text/plain

> Can the PI card be used with BPQ node software?

No. The only PI drivers that exist are for NOS and Linux. I sent mail to
G8BPQ several years ago asking him if he would provide the programming
info necessary to write a PI driver for his stuff, and never got a reply.
I don't think there is much interest on our part now anyway, even if the info
was forthcoming... but anyone else is free to take a crack at it. :-)

Barry

--
  Barry McLarnon VE3JF/VA3TCP | Internet: bm@hydra.carleton.ca
  Ottawa Amateur Radio Club | AMPRnet: barry@va3tcp.ampr.org
  Packet Working Group | FreeNet: aa187@freenet.carleton.ca

98. BPQ408.ZIP

From: daniel.meredith@aznetig.stat.com (Daniel Meredith)
Date: Sun, 13 Nov 1994 17:47:57 GMT
To: netsig@tapr.org
Message-ID: <94111310494060@aznetig.stat.com>
Rendered body type: text/plain

Hi All,
    BPQ408.ZIP Is Available from the F6FBB-SUPPORT BBS

+1-602-912-0225 300-28,800 Common Protocols

Dan

-----   \---------------/   -----
                  Arizona Network Intertie Group
               "Serving Az's Digital Needs Since 1993"

Daniel J. Meredith - N7MRP   Voice: +1-602-489-7384
P.O. Box 44563   Fax : +1-602-956-2566
Phoenix, Arizona   BBS : +1-602-912-0225
          85064-4563

List Owner: F6fbb-List@Stat.Com
Arizona Amateur Radio VHF/UHF Digital Coordinator

99. Re: [NETSIG:274] Re: Tekk Radios

From: jkbe@aluxs.att.com (John Bednar)
Date: Mon, 14 Nov 94 08:34:08 EST
To: netsig@tapr.org
Message-ID: <9411141334.AA03139@lena>
Rendered body type: text/plain

>
> >From John, WB3ESS
> > #1. Develop a 900 Mhz "data" radio ......text deleted...
>

> I would highly suggest *not* using 900 MHz. How about 1200 instead?
> ....text deleted....
> Glenn Elmore n6gn

I have heard several good reasons why not to use 900 Mhz. Lets
suggest 1200 Mhz instead. I think the earlier suggestions
apply for the RX/TX. (I'd still vote for a 3-5 watt range)
Maybe the bandwidth should be capable of 19.2 k bps out of the
box plus a design that allows higher data rates with some
filter changes.

One other item...13.8 volt operation. Add that to the list.

John, WB3ESS

100. Re: [NETSIG:283] Re: Tekk Radios

From: David Rush <rush@cacfs.ks.erg.sri.com>
Date: Mon, 14 Nov 94 09:05:54 -0600
To: netsig@tapr.org
Cc: rush
Message-ID: <9411141505.AA06643@cacfs.ks.erg.sri.com>
Rendered body type: text/plain

>One other item...13.8 volt operation. Add that to the list.

Yeah, I second that one.

David, n0oxh

101. Multi-userpacket software.. reply

From: "System Manager" <SYSTEM@csel.ncsc.navy.mil>
Date: 27 Oct 94 14:02:00 CST
To: "netsig" <netsig@tapr.org>
Message-ID: <m0r72ty-0001BrC@dptspd.sat.datapoint.com>
Rendered body type: text/plain

Hi Chris:

  I'm a bit slow replying to the message that you put out on about
11 Sept regarding "Multi-userpacket software". I think that I
may have something that you are looking for if you haven't already
found it someplace else. Let me know if you are still interested
in such a thing and I will provide you with more information.

Dennis WA6QKN,
internet: walker@csel.ncsc.navy.mil

102. Re: [NETSIG:278] Re: Tekk Radios

From: dme@ingersoll.com (Dave Ewaldz N9HKM)
Date: Mon, 14 Nov 94 08:16:52 CST
To: netsig@tapr.org
Message-ID: <9411141616.AA04073@ingersoll.com>
Rendered body type: text/plain

>Is anyone familiar with any other design that uses thermistors for
>frequency compensation of crystal oscillators?

If I remember correctly, my Motorola Maxar uses a sloppy thermister
temperature circuit, coupled with a heating element (resister) for xtal
stablization. I also remember seeing a mod to improve this circuit, as it is
supposed to by rather flakey. I haven't had to do anything to my rig, as it
is in a well regulated ambient environment.
--
 Dave Ewaldz INGERSOLL MILLING MACHINE CO.
 N9HKM   Rockford, Illinois, USA

 Internet   - dme@ingersoll.com
 Amprnet   - n9hkm%n9hkm.ampr.org@ke9yq.ampr.org
 Ma-Bell   - (815)-987-6081
 Packet ax25 mail - n9hkm@n9hkm.#ncil.il.usa.noam

103. Re: [NETSIG:283] Re: Tekk Radios

From: martins@abqn03.scs.philips.com (Steve Martin x7274)
Date: Mon, 14 Nov 1994 11:07:48 +0700
To: netsig@tapr.org
Cc: martins@abqn03.scs.philips.com
Message-ID: <9411141807.AA07722@abqn42.sca.philips.com>
Rendered body type: text/plain

> From: jkbe@aluxs.att.com (John Bednar)
> To: netsig@tapr.org
> Subject: [NETSIG:283] Re: Tekk Radios

        Stuff deleted....

> One other item...13.8 volt operation. Add that to the list.
>
> John, WB3ESS
>

Let's make it 11.5 to 15 VDC for us solar guys. It may be unrealistic
but I'm just dreaming.

****
Steve Martin, Software Engineer
Albuquerque Test Operations - Philips Semiconductors, Albuquerque, NM

VAXmail ID: ABQCLU::MARTINS   Ph: 505-822-7274
  Internet: martins@scs.philips.com   FAX: 505-822-7237
    PACKET: NR7P@WB2ARS.NM.USA.NOAM   Pager: 505-857-9078

********** Opinions expressed are purely my own. **********

104. Re: [NETSIG:283] Re: Tekk Radios

From: Jack Taylor <n7oo@huachuca-emh8.army.mil>
Date: Mon, 14 Nov 94 13:11:12 MST
To: netsig@tapr.org
Message-ID: <m0r77sC-0000weC@dptspd.sat.datapoint.com>
Rendered body type: text/plain

Another wish for the TEKK radios would be a 56kbps unit for the "soon to
come" 219 MHz range. Be nice to have radios ready when the freq becomes
available!
73 de Jack

105. Re: [NETSIG:266] More NEDA ????

From: ae1t@marvin.plymouth.edu
Date: Mon, 14 Nov 94 17:20:07 -0500
To: netsig@tapr.org
Message-ID: <9411142220.AA01920@marvin.plymouth.edu>
Rendered body type: text/plain

Reference:

> I still have not been able to get any feedback from NEDA. I guess
> everyone is busy. Does anyone know if it is $15 for membership?

According to the latest NEDA document (October 3, 1994), Associate
membership in NEDA is $15. Voting membership is $25. The fees are
somewhat higher for stations with Canadian addresses. Their mailing
address is:

        NEDA
        PO Box 563
        Manchester, NH 03105

The NEDA board members are:

        Cal Stiles, W1JFP @ W1JFP.NH
        Burt Lang, VE2BMQ @ VE2FKB.QC
        Dana Jones, WA2WNI @ WA2WNI.NY
        Jim Wzorek, K1MEA @ K1MEA.MA
        Bob Seger, WB2QBQ @ WB2QBQ.NY
        Tadd Torborg, KA2DEW @ WA2IKL.NJ

73...
Peter

Peter Drexel |
Department of Computer Science | ae1t @ oz.plymouth.edu (Internet)
Plymouth State College | ae1t @ ae1t.nh.usa.noam (Packet)
Plymouth, NH 03264 |
---

106. BPQ 4.08...

From: jkbe@aluxs.att.com (John Bednar)
Date: Mon, 14 Nov 94 11:23:56 EST
To: netsig@tapr.org
Message-ID: <9411141623.AA03225@lena>
Rendered body type: text/plain

Thanks Dan for the note.

It's also available via ftp from ftp.funet.fi

It's in the /pub/ham/packet/g8bpq directory.

John, WB3ESS

107. Proxim modems

From: bruce@pixar.com (Bruce Perens)
Date: Tue, 15 Nov 94 10:58 PST
To: netsig@tapr.org
Message-ID: <m0r7T4v-00063NC@mongo.pixar.com>
Rendered body type: text/plain

On page 19 of November's "Circuit Cellar INK", there is an add for
Timeline selling Proxim spread-spectrum RF modems for $99. It says:

> The Proxlink is a small communication device that replaces the
> use of an RS-232 cable hook-up with wireless (Radio Frequency)
> technology. Each module combines the functions of an RS-232
> compatible modem (or any other RS-232 device) and a
> transmitter/ receiver operating in the 902-928 MHz band. Indoor
> range of 500 feet possible using standard 1/4 wave antenna.
> Units support data rate to 19.2 KBaud (full duplex) and use
> multiple channels to allow for non-interfering overlapping
> systems. Message format is 8 data bits, no parity, and 1 stop
> bit. Each unit requires a 5VDC supply at a maximum of 230 mA. A
> wide variety of configurations can be accomodated with
> parameters stored in non-volatile memory (EEPROM).
> Configuration changes are supported by menu-driven, on-board
> software. Installation schematics and application details are
> available. Original cost of these units is around $600.

These are Part-15 equipment. I wonder if these units are illegal for
use in Amateur service because they don't use one of the few spreading
sequences that the FCC has approved for amateur use. That's the case
with most commercial spread-spectrum equipment that I've heard of.

If you want to call Timeline to pursue this, their technical information
phone number is 310-784-5488. Of course I don't have anything to do with
Timeline, I simply thought you might be interested in this equipment.

> Thanks
>
> Bruce Perens

108. Re: Proxim modems

From: dkelly@nebula.tbe.com (david kelly)
Date: Tue, 15 Nov 94 15:28:37 -0600
To: netsig@tapr.org
Message-ID: <9411152128.AA04748@nebula.tbe.com>
Rendered body type: text/plain

> On page 19 of November's "Circuit Cellar INK", there is an add for
> Timeline selling Proxim spread-spectrum RF modems for $99. It says:
>
>> The Proxlink is a small communication device that replaces the
>> use of an RS-232 cable hook-up with wireless (Radio Frequency)
>> technology. Each module combines the functions of an RS-232
>> compatible modem (or any other RS-232 device) and a
>> transmitter/ receiver operating in the 902-928 MHz band. Indoor
>> range of 500 feet possible using standard 1/4 wave antenna.
>> Units support data rate to 19.2 KBaud (full duplex) and use
>> multiple channels to allow for non-interfering overlapping
>> systems. Message format is 8 data bits, no parity, and 1 stop
>> bit. Each unit requires a 5VDC supply at a maximum of 230 mA. A
>> wide variety of configurations can be accomodated with
>> parameters stored in non-volatile memory (EEPROM).
>> Configuration changes are supported by menu-driven, on-board
>> software. Installation schematics and application details are

> available. Original cost of these units is around $600.
>
> These are Part-15 equipment. I wonder if these units are illegal for
> use in Amateur service because they don't use one of the few spreading
> sequences that the FCC has approved for amateur use. That's the case
> with most commercial spread-spectrum equipment that I've heard of.
>
> If you want to call Timeline to pursue this, their technical information
> phone number is 310-784-5488. Of course I don't have anything to do with
> Timeline, I simply thought you might be interested in this equipment.
>
> Thanks
>
> Bruce Perens

We bought some of these to play with at work. Haven't had a chance to play
with them yet, but some things ought to be clarified:
 - The serial link is TTL. A schematic is included showing how to build
   an RS-232 converter using a MAX-232.
 - No enclosure, no antenna. Funny little antenna jack.

As for amateur radio use: don't put too big of an antenna or add a power
amplifier. Then you would not be using it in the amateur radio service,
and suddenly the DS coding is legal. This radio would be real tempting to
mount on the tower. An example in the manual shows a pair of them connected
via serial ports back-to-back as a repeater. They even have a maintenance
protocol for reconfiguring the remote radio(s).

One day I hope to find time to apply power to mine.

73, David N4HHE
dkelly@nebula.tbe.com

109. Re: [NETSIG:291] Proxim modems

From: Jeff King <wb8wka@wb8wka.ampr.org>
Date: Tue, 15 Nov 94 20:17:46 UTC
To: netsig@tapr.org
Message-ID: <5511@wb8wka.ampr.org>
Rendered body type: text/plain

The Timeline Proxim SS modems are the OEM version of the ones I was carting
around and playing with at the ARRL DCC this last August. OEM in this
case means no case, antenna or apparent RS-232 conversions.

Range with a 1/4 antenna covered most of the motel. I'd guess that to be about
500 feet as advertised. Throughput was between 1200-1600 bytes a second.
This was with SLIP links operating both units in broadcast mode.

Interestingly enough, while the serial rate is limited to 19.2kbaud, the
radio data rate is between 161-262 kbaud. I called proxim to see if
they would release the source (yeah right, but hey?) to see if I could
bump the UART serial rate up, but that they didn't seem to want to. The
processor in them I seem to recall is a 6502.

I'm told by a fellow who makes SS his business that the Proxims are
poor performers compared to some other units, but for $99 it certainly
is tempting.

Timeline claims they are shipping schematics with them. Anyone confirm this?

Jeff

SMTP   - wb8wka@wb8wka.ampr.org [44.102.16.16] | Operating
Internet - wb8wka@merit.edu , jking@merit.edu | on the edge
AX25   - wb8wka@wu8c.#SEMI.MI.USA.NOAM | of Chaos

110. Re: [NETSIG:292] Re: Proxim modems

From: srbible@cs.nps.navy.mil (Steven R. Bible)
Date: Tue, 15 Nov 1994 17:24:52 -0800
To: netsig@tapr.org
Message-ID: <9411160133.AA05477@cs.nps.navy.mil>
Rendered body type: text/plain

Bruce Perens said...

>> These are Part-15 equipment. I wonder if these units are illegal for
>> use in Amateur service because they don't use one of the few spreading
>> sequences that the FCC has approved for amateur use. That's the case
>> with most commercial spread-spectrum equipment that I've heard of.

Then David N4HHE said...

>As for amateur radio use: don't put too big of an antenna or add a power
>amplifier. Then you would not be using it in the amateur radio service,
>and suddenly the DS coding is legal. This radio would be real tempting to
>mount on the tower. An example in the manual shows a pair of them connected
>via serial ports back-to-back as a repeater. They even have a maintenance
>protocol for reconfiguring the remote radio(s).

For which I reply...

This is taken from the 7th Annual One Day Seminar on Spread Spectrum
presented by the Vehicular Technology Society of the IEEE, dated June 22,
1993. From a talk given by Graham Barnes, Director of Marketing and Sales,
Western Multiplex.

"The regulatory basis of Part 15 spread spectrum links is provided by the
FCC Rule Part 15.247.

...

Transmitters operating under Part 15.247 may intentionally radiate only in
the ISM (Industrial, Scientific and Medical) band and may only use frequency
hopping or direct sequence techniques. No other spreading techniques are
permitted. There are three microwave frequency bands allocated to this service:

        902 - 928 MHz (26 MHz bandwidth)
        2400 - 2483.5 MHz (83.5 MHz bandwidth)
        5725 - 5850 MHz (125 MHz bandwidth)

...maximum transmitter EIRP which is limited to +6dBW (1 watt into a 6dBi
gain antenna). However, users may take advantage of transition provisions
under which the EIRP limit is modified to a 1 W RF output power into any
antenna. Products that are certified by June 23, 1992 and manufactured up
until June 23, 1994 fall under the transition provisions and equipment users
with these products can operate at this power level indefinitely."

As for the Amateur Radio Service read up on section 97.311 for SS
techniques. In this section it describes frequency hopping and direct
sequence regulations. Under DS there are three allowed spreading codes.
Needless to say, the part 15 devices that are being sold are not likely to
be using one of these three spreading codes. Thus it is better to operate
these devices under the part 15 provision.

Steve, N7HPR

srbible@cs.nps.navy.mil
Naval Postgraduate School, Monterey, CA 93943

111. Re: [NETSIG:293] Re: Proxim modems

From: kelly@tomcat1.tbe.com (David Kelly)
Date: Tue, 15 Nov 94 20:51:08 -0600
To: netsig@tapr.org
Message-ID: <9411160251.AA10388@tomcat1.tbe.com>
Rendered body type: text/plain

> Timeline claims they are shipping schematics with them. Anyone confirm this?

hi hi hi hi. Not by my yardstick. The manuals are pretty good, but one
manual is for the "finished product" and the other is part of the OEM
configuration software stuff. Tells you how to remove "Proxim" from the
setup screen and replace it with your name, etc.

What passes for schematics is (4) 8.5"x11" xeroxes of the 4 quadrants of
a C sized schematic. Don't have it in front of me, but as I recall all that
was useful (well, maybe useful) was the hand drawn additions showing how
to add a Maxim 232 (or 233?) RS-232 driver.

Jeff King mentioned that he thought Proxim was using a 6502, and that is
true. Never saw a 65C02 in PLCC before. Probably never again. And it wasn't
even a special hi-integration microcontroller version of the 65C02. Couldn't
tell what UART was used, guess it got integrated into one of the special

chips.

73, David N4HHE
dkelly@nebula.tbe.com <<-- use this address

112. Test procedures

From: Jack Taylor <n7oo@huachuca-emh8.army.mil>
Date: Tue, 15 Nov 94 20:41:49 MST
To: netsig@tapr.org
Message-ID: <m0r7bLs-0001TmC@dptspd.sat.datapoint.com>
Rendered body type: text/plain

The process of evaluating data modems and radios appears to verge on the
black arts. All too often the main recourse the average packeteer has
is too hook up his gear and see if it "works". I feel there is a BIG NEED
to have someone(s) write an article(s) for the PSR explaining in simple terms
what test equipment and procedures are needed to perform one's own
evaluation on his equipment.

Most of the measurement procedures are "out there", but finding and setting
up to use them can be rather frustrating if one hasn't gone thru a
particular procedure before. Awhile back I was curious as to what phase
delay changes were taking place before and after some IF filter mods.
After some search, discovered my old Tektronics scope manual explained
this application in sufficient detail for me to grasp and to perform it
with reasonable precision. Now my reference library may not be up to
date, but it is reasonably extensive...and except for the tek manual,
silent on making phase measurements.

Another problem in this area is sematics. Test parameters should be
clearly and consistently defined. I wrestled quite a bit with the terms
associated with "delay". My references conflicted in the definition of
"group delay". It finally dawned on me that in the context used within
our packet circle it was meant to indicate the amount of change in phase
over a limited range of audio frequencies.

If we are EVER to see packet move "forward" those who understand how to
make the typically few test configurations, needs to take the rest of us
by the hand and walk us through it. Once, more folks within our ranks
feel confident enough to evaulate the performance of their gear, SOME of
these people may start coming up with worthwhile mods and design changes.

As an example of this theme I've extracted the following from rec.radio.
amateur.digital.misc:

Subject: 9600bd radio's ?? NOT !
Date: 1 Nov 94 20:46:19 GMT
Organization: Eindhoven University of Technology, The Netherlands
Lines: 63
NNTP-Posting-Host: etprs.phys.tue.nl
Summary: Are '9600bd ready' radio really ready ?
Keywords: packet, 9600bd, g3ruh, k9ng, amateur-radio
X-Newsreader: NN version 6.5.0 #11 (NOV)

Since some time now several manufacterers of ham radio equipment offer
'9600 bd ready' vhf/uhf transceivers. I got one of these for some tests,
and was very surprised with the results. This is a brandnew mobile uhf rig,
FM only, from one of the 'big three' brands. The price is in the $500-$600
range.

Turnaround time : TX to RX is 120 ms. RX to TX is 140 ms

Transmitter frequency charasteristics : (reference = 3kHz deviation at 1kHz)

160 Hz - 7400 Hz straight whitin 2 dB. (160 Hz : +1 dB, 7400 Hz : -1 dB)

When the freq. drops we see this peak :
95 Hz : +3   dB (4.2 kHz deviation)
59 Hz : +6   dB (6   khz deviation)
41 Hz : +8.5 dB (7.7 kHz deviation)
30 Hz : +6   dB (6   kHz deviation)
25 Hz : +3   dB
22 Hz : 0   dB
20 Hz : -3   dB

I also measured group delay time from the transmitter :
30Hz : -11 ms, 35Hz : -7.5 ms, 41Hz : -4 ms,   45Hz : -3 ms,   45Hz : -3 ms,
50Hz : -2 ms, 60Hz : -1 ms,   70Hz : -480 us, 80Hz : -230 us, 90Hz : -100 us,
110 Hz : 0 us, 150 Hz : 50 us, 500 Hz : 50 us, ... 7000Hz : 47 us.

I also did the same measurements on the receiver. There the frequency response
was totally flat from 12 Hz to 5 kHz. -6db points at 10 Hz and 7 kHz.
Group delay was at a constant 150 us over the complete 20 Hz to 7 kHz range.

The next thing was of course to do some packet tests with 9600bd modems.
I did it by transmitting and receiving >10000 full-length packets
of 256 bytes.

The result was astounding, but understandable when you look at the above
measurements : receiving was ok, about 98 % of all packets were decoded ok.
But the transmitter produced only 55 % readable packets !!

This is clearly a PLL-transceiver which is modulated at the VCO from the PLL.

How can it be that this rig is being sold as '9600bd ready' ? Do they have
different 9600bd modems in Japan? The G3RUH / K9NG modem system needs a flat
frequency response from 20 Hz to 6 kHz.

And what about those turnaround times ? 120 ms is IMHO totally unusable
for 9600bd packet. This thing sure is going to produce lots of collisions
on busy channels !

Or am i setting my standards too high ? For somebody who only receives large
packets and transmits small packets (the average mailbox user ?) the rig
may *seem* to work ok. (at a given bit error rate, the chance of producing
a garbled packet is of course smaller for small packets)

I am wondering if anybody did the same tests on so-called '9600bd ready'
transceivers. Especially the FM rigs, the allmode rigs should be ok because
they have a separate FM modulator, and don't use the PLL for modulation.

In fact, i tested an allmode rig from the same manufacterer and found it to
be excellent, turnaround times of less then 25 ms, and flat frequency
responses. And thus also very low bit-error rates, 97 % or better according
to the above-mentioned tests.

Joop, PE1DNA.

End of forwarded message -

73 de Jack

113. Re: [NETSIG:295] Re: Proxim modems

From: bruce@pixar.com (Bruce Perens)
Date: Tue, 15 Nov 94 22:10 PST
To: netsig@tapr.org, netsig@tapr.org
Message-ID: <m0r7dZc-00064wC@mongo.pixar.com>
Rendered body type: text/plain

> From: kelly@tomcat1.tbe.com (David Kelly)
> [lots of stuff about the Proxim modem]

Well, how did yours work, what are you using them for, and what kind
of distance did you get with gain antennas?

Bruce

114. proxim rf modems

From: Fred Treasure <ke5ci@astro.wnmu.edu>
Date: Tue, 15 Nov 94 22:32:27 UTC
To: netsig@tapr.org
Message-ID: <13298@astro.wnmu.edu>
Rendered body type: text/plain

I have a couple of the proxim rf modems working. The schematic that is
provided with the modems uses a MAX238 chip to convert the 5 volt signals
to RS232 levels. Unfortunately, that is not a common chip. I used the
readily available MAX232 and only wired the TX and RX data lines. That is
enough to get it working. The framing character is programmable. I set it
to 192 and KISS works like a charm. I got ftp speeds of 500 cps with JNOS
for Linux talking to an old slow laptop. I'm curious to see what kind of
range the units have. They work short distances with a 4 inch piece of
wire-wrap tacked to the back side of the SMA socket.

115. Re: [NETSIG:296] Test procedures

From: dkelly@nebula.tbe.com (david kelly)
Date: Wed, 16 Nov 94 09:03:28 -0600

To: netsig@tapr.org
Message-ID: <9411161503.AA07299@nebula.tbe.com>
Rendered body type: text/plain

Jack Taylor <n7oo@huachuca-emh8.army.mil> writes:
> The process of evaluating data modems and radios appears to verge on the
> black arts. All too often the main recourse the average packeteer has
> is too hook up his gear and see if it "works". I feel there is a BIG NEED
> to have someone(s) write an article(s) for the PSR explaining in simple terms
> what test equipment and procedures are needed to perform one's own
> evaluation on his equipment.

ditto. I hope you are volunteering because it appears you did an excellent
job testing your new '9600bd ready' radio.

[much deleted]
> How can it be that this rig is being sold as '9600bd ready' ? Do they have
> different 9600bd modems in Japan? The G3RUH / K9NG modem system needs a flat
> frequency response from 20 Hz to 6 kHz.

Name names! The only way we can cure this problem is to shout, "the emperor
has no clothes."

73, David N4HHE
dkelly@nebula.tbe.com

116. [NETSIG:297] Re: Proxim modems

From: dkelly@nebula.tbe.com (david kelly)
Date: Wed, 16 Nov 94 09:03:51 -0600
To: netsig@tapr.org
Message-ID: <9411161503.AA07303@nebula.tbe.com>
Rendered body type: text/plain

> > From: kelly@tomcat1.tbe.com (David Kelly)
> > [lots of stuff about the Proxim modem]
>
> Well, how did yours work, what are you using them for, and what kind
> of distance did you get with gain antennas?
>
>   Bruce

Actually, they are still in the "to do" stack and should be powered up this
weekend or next.

Fred Treasure <ke5ci@astro.wnmu.edu> writes:
> They work short distances with a 4 inch piece of
> wire-wrap tacked to the back side of the SMA socket.

Is that thing really an SMA socket? Nothing I had on hand fit.

73, David N4HHE
dkelly@nebula.tbe.com

117. proxim antenna connector

From: Fred Treasure <ke5ci@astro.wnmu.edu>
Date: Wed, 16 Nov 94 08:55:17 UTC
To: netsig@tapr.org
Message-ID: <13338@astro.wnmu.edu>
Rendered body type: text/plain

The antenna connector is listed as BFA in one place and SMA in another.
I plan to run a short piece of 50 ohm coax from the back of the connector
(what ever it is) to a type N mounted on the metal box I'm putting the
modem in.

118. Re: [NETSIG:289] Re: More NEDA ????

From: martins@abqn03.scs.philips.com (Steve Martin x7274)
Date: Wed, 16 Nov 1994 11:29:03 +0700
To: netsig@tapr.org
Message-ID: <9411161829.AA01179@abqn42.sca.philips.com>
Rendered body type: text/plain

Can someone give me an explanation of what NEDA is?

Thanks.

****
Steve Martin, Software Engineer
Albuquerque Test Operations - Philips Semiconductors, Albuquerque, NM

```
VAXmail ID:  ABQCLU::MARTINS                          Ph:  505-822-7274
  Internet:  martins@scs.philips.com                 FAX:  505-822-7237
    PACKET:  NR7P@WB2ARS.NM.USA.NOAM               Pager:  505-857-9078

******************  Opinions expressed are purely my own.  **********************
```

119. Tekk Radios - Request for summary.

From: Mark Stappenbeck <froggy@southwind.net>
Date: Wed, 16 Nov 1994 12:47:38 -0600 (CST)
To: netsig@tapr.org
Message-ID: <Pine.BSI.3.90.941116124239.3092A-100000@onyx.southwind.net>
Rendered body type: text/plain

I'm really sorry I joined this area as late as I did. I've missed most
of the tekk radio discussion, unfortunately.

Could anyone tell me whether the most Tekk radios are capable of 9600
baud operation "out of the box"? The tech rep at the factory says it is
but I don't really know whether I'll have to go a cuttin' at it to get it
up and running.

Thanks very much for anyones observation on this and I'll keep an eye on
this area in the future.

Regards, Mark Stappenbeck - N0PWZ froggy@southwind.net

120. Re: [NETSIG:302] Re: More NEDA ????

From: crompton@nadc.nadc.navy.mil (D. Crompton)
Date: Wed, 16 Nov 94 14:01:07 -0500
To: netsig@tapr.org
Message-ID: <9411161901.AA06699@nadc.nadc.navy.mil>
Rendered body type: text/plain

Can someone give me an explanation of what NEDA is?

I think it is some dictorial , do it my way or not at all
group in New England - also WAS?? very anti TCP/IP

You know those guys who think TCP/IP hogs channels.
They try to "control" or disallow it's use. Maybe
"Netrom Nerds" would be a better name.

Doug

.

121. Re: [NETSIG:302] Re: More NEDA ????

From: tmoulton@ram.net
Date: Wed, 16 Nov 94 14:26:48 EST
To: netsig@tapr.org
Message-ID: <05720.15021573@RAMail>
Rendered body type: text/plain

```
>From: netsig@tapr.org (netsig (tapr) )
>Date: Wed, 16 Nov 94 12:42 CST
>Reply-To: netsig@tapr.org
>Sender: netsig@tapr.org
>To: netsig@tapr.org
>Subject: [NETSIG:302] Re: More NEDA ????
>
>
>Can someone give me an explanation of what NEDA is?
>
>Thanks.
>
>*****************************************************************************
>***
>Steve Martin, Software Engineer
>Albuquerque Test Operations - Philips Semiconductors, Albuquerque, NM
>
>VAXmail ID:  ABQCLU::MARTINS                          Ph:  505-822-7274
>  Internet:  martins@scs.philips.com                 FAX:  505-822-7237
>    PACKET:  NR7P@WB2ARS.NM.USA.NOAM               Pager:  505-857-9078
>
>******************  Opinions expressed are purely my own.  *****************
>****
>
```

NEDA - New England Digital Association is an orginization devoted to getting
networking running between the regions. There are no nodes owned by neda they
just provide a forum for exchange of ideas and a set of standards to operate
nodes by. Priority #1 is No Hidden Transmitters

Only nodes that meet the neda guidelines are considered for the neda maps
that are published in the publication.

tom, w2vy

122. Re: [NETSIG:303] Tekk Radios - Request for summary.

From: bruce@pixar.com (Bruce Perens)
Date: Wed, 16 Nov 94 11:30 PST
To: netsig@tapr.org, netsig@tapr.org
Message-ID: <m0r7q3s-00063LC@mongo.pixar.com>
Rendered body type: text/plain

From: Mark Stappenbeck <froggy@southwind.net>
> Could anyone tell me whether the most Tekk radios are capable of 9600
> baud operation "out of the box"?

Congratulations. I just sent you the list archive to sort through.

The short answer is: Buy a KS-900, _not_ a KS-960. The KS-900 works
out of the box. There are some very trivial mods, but it will work
without them.

        Bruce Perens

123. Re: Test procedures

From: jra1854@tntech.edu (Jeffrey Austen)
Date: Wed, 16 Nov 1994 14:28:09 -0600
To: netsig@tapr.org
Message-ID: <01HJJTRH6ODYBOUALV@tntech.edu>
Rendered body type: text/plain

>[much deleted]
>> How can it be that this rig is being sold as '9600bd ready' ? Do they have
>> different 9600bd modems in Japan? The G3RUH / K9NG modem system needs a flat
>> frequency response from 20 Hz to 6 kHz.
>
>Name names! The only way we can cure this problem is to shout, "the emperor
>has no clothes."

I've been saying that for a while. We don't have a standard. We need a
standard. It needs to define the transmitted signal; nothing else will
work for a multiple access system.

What we really need are built-in modems so there is no more fooling around
with interfaces where interfaces shouldn't be...but that would be a bad
idea to do before we standardize the details of the modulation.

And, yes, I'll volunteer to help.

Jeff, k9ja

Jeffrey Austen | Tennessee Technological University
jra1854@tntech.edu | Box 5004
+1 615 372 3485 | Cookeville Tennessee 38505   U.S.A.

124. Re: [NETSIG:302] Re: More NEDA ????

From: rmackay@bud.peinet.pe.ca (Ron MacKay)
Date: Wed, 16 Nov 1994 23:15:42 -0400
To: netsig@tapr.org
Message-ID: <9411170315.AA22333@bud.peinet.pe.ca>
Rendered body type: text/plain

>
>Can someone give me an explanation of what NEDA is?
>
>Thanks.
>
>***
>Steve Martin, Software Engineer
>Albuquerque Test Operations - Philips Semiconductors, Albuquerque, NM
>

```
>VAXmail ID:  ABQCLU::MARTINS                          Ph:  505-822-7274
>  Internet:  martins@scs.philips.com                 FAX:  505-822-7237
>    PACKET:  NR7P@WB2ARS.NM.USA.NOAM               Pager:  505-857-9078
>
>
Steve NEDA stands for North East Digital Association, based in Manchester
NH. They produce some great literature on Packet Networking, in particular a
splendid Annual edition manual with all sorts of technical and operational
information. They have set some good standards on TheNet parameters and
Networking policies that have been adopted or at least modelled after, by
many Networks in Eastern US and Canada.
Here is a quote from their manual:

" NEDA is a club formed in 1989 to promote Packet Radio and to lead the
development of a general purpose, user accessible wide area Packet Radio
Network."

"NEDA's area of interest includes the North Eastern United States, Quebec,
Ontario and the Maritime Provinces."

"NEDA publishes the NEDA Quarterly as a periodical.....The NEDA Annual is
published each year as well."

"NEDA's focus is to publish information on Packet Radio and Packet Radio
Networking."

For more information write to:
NEDA
PO Box 563
Manchester, NH  03105

------------
73 - Ron
VE1AIC @VE1AIC.PE.CAN.NOAM
```

125. [NETSIG:302] Re: More NED

```
From: daniel.meredith@aznetig.stat.com (Daniel Meredith)
Date: Thu, 17 Nov 1994 03:51:57 GMT
To: netsig@tapr.org
Message-ID: <94111621050988@aznetig.stat.com>
Rendered body type: text/plain
```

```
-> Date: Wed, 16 Nov 94 12:41 CST
-> From: martins@abqn03.scs.philips.com (Steve Martin x7274)
-> To: netsig@tapr.org
-> Subject: [NETSIG:302] Re: More NEDA ????
->
->
-> Can someone give me an explanation of what NEDA is?
->
-> Thanks.

It is the Northeast Digital Association...

Basically a networking organization in the NE U.S.

They have come up with some interesting network techniques and publish
a pretty nice quarterly journal with helpful tips on the latest network
software etc.  I use them as reference manuals and tweak my system by
taking a look at some of the tips...I don't necessarily agree with all
their ideas,  but many of them are quite plausible...


73 de Dan


-----                     \---------------/                         -----
                    Arizona Network Intertie Group
                "Serving Az's Digital Needs Since 1993"

Daniel J. Meredith - N7MRP                   Voice: +1-602-489-7384
P.O. Box 44563                               Fax  : +1-602-956-2566
Phoenix,  Arizona                            BBS  : +1-602-912-0225
          85064-4563

List Owner: F6fbb-List@Stat.Com
Arizona Amateur Radio VHF/UHF Digital Coordinator
```

126. Re: [NETSIG:306] Re: More NEDA ????

From: wa3dsp@wa3dsp.ampr.org (Doug Crompton - Richboro, PA - [44.80.08.120])
Date: Thu, 17 Nov 94 04:19:13 GMT
To: netsig@tapr.org
Message-ID: <46471@wa3dsp.ampr.org>
Rendered body type: text/plain

```
===== Begin of included message =====

> > Only nodes that meet the neda guidelines are considered for the neda
> maps that are published in the publication.
>
> I rest my case...
>
  ===== End of included message =====
```

127. Buckmaster Callbook CD and JNOS 110G

From: Mark Stappenbeck <froggy@southwind.net>
Date: Thu, 17 Nov 1994 17:25:04 -0600 (CST)
To: netsig@tapr.org
Message-ID: <Pine.BSI.3.90.941117172049.21169B-100000@onyx.southwind.net>
Rendered body type: text/plain

```
Would anyone have any info on interfacing JNOS 110G (which I really like)
and the Buckmaster Callbook CD? I note, from the info I have, that it can
be done but no specifics have been found. Could anyone poiint out the
correct procedure for accomplishing this? I'd love to get it up and running.

Also, is it automatic, or is it very "manual" in nature. Thanks very much
for all your help...Mark Stappenbeck, N0PWZ - froggy@southwind.net
```

128. Re: [NETSIG:312] Buckmaster Callbook CD and JNOS 110G

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Fri, 18 Nov 1994 01:47:06 -0700 (MST)
To: netsig@tapr.org
Message-ID: <Pine.SUN.3.90.941118014016.14805A-100000@kazak>
Rendered body type: text/plain

```
On Thu, 17 Nov 1994, Mark Stappenbeck wrote:

> Would anyone have any info on interfacing JNOS 110G (which I really like)
> and the Buckmaster Callbook CD? I note, from the info I have, that it can
> be done but no specifics have been found. Could anyone poiint out the
> correct procedure for accomplishing this? I'd love to get it up and running.
>
> Also, is it automatic, or is it very "manual" in nature. Thanks very much
> for all your help...Mark Stappenbeck, N0PWZ - froggy@southwind.net
>
>
>
>
        Mark I have seen the switches in config.h that you must turn on
so jnos will work with a CD rom, but never used that function. I suggest
that you get the source code (the big file over 1 million bytes when
.zip) and find the .c and .h files that implement the BuckMaster
interface. Don't try to understand the code. But look for a name or
better yet a ham call. Then get in touch with that guy.

73, de karl k5di
```

129. Local Collision Prevention

From: fuseki!mtewe!vodall@hprwp.fc.hp.com
Date: Fri, 18 Nov 1994 12:58:48 -0700 (MST)
To: netsig@tapr.org (NETSIG TAPR)
Message-ID: <m0r8ZSN-0002dKC@mtewe.kevin.mt.us>
Rendered body type: text/plain

```
Hello All,

We have a node stack on the Sweet Grass Hills of North-Central Montana
consisting of a 145.010 port, a 147.550 local access port, and a UHF
backbone link going south and north.

This system has proven to be a big improvement over the original lone
145.010 node.  Unfortunately, there's still a couple glitches.

We choose 147.550 as the local access frequency for its frequency
separation from the 145.010 port.  However, the antennas as still so
close that the '010 radio desenses and "collides" with anything coming
```

in on the '755 channel. It's not too bad, and thanks to the new "maxwait"
parameter in NOS, it can be compensated for. But any retry slows the
system and should be avoided.

I've been thinking there must be some way to tell the '010 radio to not
transmit when '755 is hearing something. And it would probably be
advantageous to go the other way also though I haven't directly observered
interference on '010 from the '755 transmitter. There may be none - as
'755 is running less power.

My original thought would be to run a wire from the DCD circuitry in the
'755 TNC to the DCD input on the '010 TNC. That should prevent transmissions
on '010 from nuking the '755 packets in progress.

I then heard that there was a circuit in the NEDA manual for doing this
by coupling a little audio from one receiver to the other TNC. Enough to
trigger the carrier detect but not enough to register as a valid packet.
Unfortunately, I can't find it in my '94 manual and don't have access to others
while visiting here in Colorado.

My questions for the net:

Does anybody have experience with these techniques? Do they work? Are they
worth implementing? Could somebody post a brief description of the audio
taping method?

Both TNC's involved have the TAPR DCD kit installed.

I realize that preventing the '010 signal from transmitting DURING a '755
uplinked packet only solves half the problem. An '755 uplink could still
occur during a '010 packet. The local users (all 4 of us) would have to
implement something similar on our uplink circuits to fully solve this
problem.

--

Bill

Temporary-Reply-To: vodall%mtewe%fuseki@hprwp.fc.hp.com
Reply-To: vodall@bigsky.dillon.mt.us
Amateur Packet: wa7nwp@n7see.mt.usa.noam

130. Re: [NETSIG:314] Local Collision Prevention

From: "William L. Barnes" <wlbarn@saturn.bloomu.edu>
Date: Fri, 18 Nov 1994 16:16:33 -0500 (EST)
To: netsig@tapr.org
Cc: netsig@tapr.org
Message-ID: <Pine.SUN.3.90.941118161308.20216A-100000@planetx>
Rendered body type: text/plain

On Fri, 18 Nov 1994 fuseki!mtewe!vodall@hprwp.fc.hp.com wrote:

> separation from the 145.010 port. However, the antennas as still so
> close that the '010 radio desenses and "collides" with anything coming
> in on the '755 channel. It's not too bad, and thanks to the new "maxwait"

Do you have bandpass cans on the radios? You may want to get 2 cavities,
one tuned for .01 and the other tuned for 147.550... This may help
alot. It did help with our repeater. The bad thing is that the cans are
about $200 a peice new.

Other than that or moving the antenna apart, I don't know what else will
work for you.

I hope this helps.
73, de Bill, N3JIX
****
* Bill Barnes, N3JIX   * Bloomsburg Unviersity *
* Internet: wlbarn@planetx.bloomu.edu * Bloomsburg, Pa   *
* Packet : n3jix@n3jix.#epa.pa.usa.noam   *
****

131. Bibliography

From: "Rick Whiting" <Rick_Whiting@ATK.COM>
Date: 18 Nov 1994 17:40:02 -0600
To: "Post hfsig TAPR" <hfsig@tapr.org>, "Post Netsig TAPR" <netsig@tapr.org>
Message-ID: <199411182339.RAA02651@ATK.COM>
Rendered body type: text/plain

Subject: Time:5:28 PM
  OFFICE MEMO   Bibliography   Date:11/18/94
I recommend you add the following to your bibliography list if not your
personal reference library:

"Defining, Designing, and Evaluating Digital Communication Systems," by
Bernard Sklar, IEEE Communications Magazine, Nov. 1993, pp. 92-101.

The subtitle is "A tutorial that emphasizes the subtile but straightforward
relationships we encounter when transforming from data-bits to channel-bits
to symbols to chips." I'm not sure I agree with Dr. Sklar on the
straightforwardness of it, but I do agree it's subtile.

73 (and good reading!),
Rick, W0TN

132. Re: [NETSIG:314] Local Collision Prevention

From: dwolf@tcet.unt.edu (Dave Wolf)
Date: Fri, 18 Nov 94 19:44:36 CST
To: netsig@tapr.org
Message-ID: <9411190144.AA105592@tcet.unt.edu>
Rendered body type: text/plain

How are the two 2m antennas separated? ((vertically? horizontally? by
how far?)) I have had very good luck with vertical separation running 3
2m and 1 70cm ports. Directional antennas on different bands in SAME
PLANE was a problem until vertical separation introduced.

Dave WO5H

133. Re: [NETSIG:314] Local Collision Prevention

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Sat, 19 Nov 1994 00:37:01 -0700 (MST)
To: netsig@tapr.org
Message-ID: <Pine.SUN.3.90.941118161754.24554B-100000@kazak>
Rendered body type: text/plain

On Fri, 18 Nov 1994 fuseki!mtewe!vodall@hprwp.fc.hp.com wrote:

>
>
> Hello All,
>
> We have a node stack on the Sweet Grass Hills of North-Central Montana
> consisting of a 145.010 port, a 147.550 local access port, and a UHF
> backbone link going south and north.
>
> This system has proven to be a big improvement over the original lone
> 145.010 node. Unfortunately, there's still a couple glitches.
> My original thought would be to run a wire from the DCD circuitry in the
> '755 TNC to the DCD input on the '010 TNC. That should prevent transmissions
> on '010 from nuking the '755 packets in progress.

        This should work Bill, but the best solution is the most
expensive. You need to use a notch cavity in both receiver ports and the
system will fly right.
        Time to quit, must go home on friday afternoon...73 karl k5di

        But if you can't afford the things the second most best would be
to choose which is most important and IF YOU ARE USING UNSQELCHED AUDIO
you can do the NEDA trick. Or you can wire the dcd of one to the dcd of
the other.

        But it will not gain you very much.

-karl

134. Re; Local Collisions

From: Jack Taylor <n7oo@huachuca-emh8.army.mil>
Date: Sat, 19 Nov 94 14:36:14 MST
To: vodall%mtewe%fuseki@hprwp.fc.hp.com
Cc: netsig@tapr.org
Message-ID: <m0r8xYn-00010dC@dptspd.sat.datapoint.com>
Rendered body type: text/plain

Bill, the front-end cavity filtering is a good way to prevent collisions
but might be a little costly if you have to purchase new cavities..
You didn't mention what model receivers were involved with each frequency.
Another approach would be to replace the offending receiver with one that

has a "tighter" frontend. If that isn't acceptable, another approach would
be to either build or purchase a helical resonator filter for one or both
receivers...There are a couple of firms that sell these and I think they
are around $60 or so each...
73 de Jack

135. Re: [NETSIG:318] Re: Local Collision Prevention

From: rmackay@bud.peinet.pe.ca (Ron VE1AIC)
Date: Sat, 19 Nov 1994 17:43:54 -0400
To: netsig@tapr.org
Message-ID: <9411192143.AA02173@bud.peinet.pe.ca>
Rendered body type: text/plain

>
>
>
>On Fri, 18 Nov 1994 fuseki!mtewe!vodall@hprwp.fc.hp.com wrote:
>
>>
>>
>> Hello All,
>>
>> We have a node stack on the Sweet Grass Hills of North-Central Montana
>> consisting of a 145.010 port, a 147.550 local access port, and a UHF
>> backbone link going south and north.
>>
>> This system has proven to be a big improvement over the original lone
>> 145.010 node. Unfortunately, there's still a couple glitches.
>> My original thought would be to run a wire from the DCD circuitry in the
>> '755 TNC to the DCD input on the '010 TNC. That should prevent transmissions
>> on '010 from nuking the '755 packets in progress.
>
>   This should work Bill, but the best solution is the most
>expensive. You need to use a notch cavity in both receiver ports and the
>system will fly right.
>   Time to quit, must go home on friday afternoon...73 karl k5di
>

I had a similar setup at our LAN node site. We had no interaction between
our 145.01 radio and the the LAN radio on 147.510 mhz but we did have 100ft
of vertical separation on the antennas.
At home, on my BBS, I ran 147.510 & 145.01 as well, until the .01 port when
to 220mhz and had little interaction between radios by putting a single
bandpass cavity on each radio. The antenna separation here was only 30ft.
Surplus cavities can sometimes be picked up for around $50 or less, or you
can build one fairly easily.

Doing the DCD interconnect could really slow things down if one of the
channels was busy with other traffic..which would be typical of most
145.01 channels.

73 - Ron VE1AIC

136. Re: Local Collision Prevention

From: Jeff King <wb8wka@wb8wka.ampr.org>
Date: Sat, 19 Nov 94 19:18:07 UTC
To: netsig%tapr.org@hamgate.merit.edu
Message-ID: <5685@wb8wka.ampr.org>
Rendered body type: text/plain

In-Reply-To: your message of Fri Nov 18 13:53:00 1994
             <m0r8ZSN-0002dKC@mtewe.kevin.mt.us>

This really is a level 1 issue and should be solved as such.

Fair radio has some bandpass filters in the 20-30 dollar range that
have a fairly high Q and should do the trick with that kind of
frequency separation. I have used some of them on the systems I
maintain and they really do seem to work well. The Army part
number is F-193/U and the frequency range is 121-142mhz. They require
some modifications (filing off about 1/8" of the 'cup' capacitor) but
they should tune right up.

Also, you might try reducing your power levels and/or going to some
comercial equipment. Most of the ham radios these days are designed to
recieve from 'DC to light' and as such they are wide open to interference.

Good luck.

```
Jeff
SMTP     - wb8wka@wb8wka.ampr.org [44.102.16.16] |  Operating
Internet - wb8wka@merit.edu , jking@merit.edu    |       on the edge
AX25     - wb8wka@wu8c.#SEMI.MI.USA.NOAM         |             of Chaos
```

137. 1.2GHz bandplan

From: dwolf@tcet.unt.edu (Dave Wolf)
Date: Sun, 20 Nov 94 9:08:14 CST
To: netsig@tapr.org
Message-ID: <9411201508.AA121947@tcet.unt.edu>
Rendered body type: text/plain

I'm looking for input on recommended channelization and bandplan for digital activity on the 1.2 GHz band. Has your regional packet group and/or repeater coordinating group ironed out a plan?

I'm representing the TPRS (Texas Packet Radio Society) which assists the Texas VHF-FM Society (the frequency-coordinating volunteers in TX) in bandplanning.

Thanks for your input.

Dave WO5H
Chair TAPR BBSSIG
VP Texas Packet Radio Society

138. HIERARCHICAL WRAP-UP

From: dwolf@tcet.unt.edu (Dave Wolf)
Date: Sun, 20 Nov 94 9:25:07 CST
To: bbssig@tapr.org
Cc: netsig@tapr.org
Message-ID: <9411201525.AA122148@tcet.unt.edu>
Rendered body type: text/plain

If you 've been following the SIGs for a while, you may remember that a proposal for 'standardization' of hierarchical addressing is now open for comment and input. A copy of this proposal is in the current Packet Status Register (TAPR's quarterly journal). An electronic version is avail in the archives or if you request a copy, I'll be happy to e-mail one to you (dwolf@tcet.unt.edu). A printed copy may be obtained from the TAPR office, too.

As the Dec 31 deadline approaches, the authors of the proposal would like to include as many regional address elements as possible. If you have a complete list of regional hierarchical address elements (the parts with the '#' front of them if you're in North America; provinces, prefectures, departments, etc., and #regions, if you are elsewhere), please e-mail them bbssig@tapr.org. I'll download them to the file I've been building, plus everyone on the SIG will benefit from having this reference info.

Many thanks to all who have commented and contributed to this effort.

Dave Wolf WO5H
TAPR BBS SIG Chair

139. Re: [NETSIG:322] 1.2GHz bandplan

From: wx3k@wx3k.ampr.org.
Date: Sun, 20 Nov 94 07:49:04 UTC
To: netsig@tapr.org
Message-ID: <2017@wx3k.ampr.org.>
Rendered body type: text/plain

A copy of the Northern California 1200MHz bandplan (and any of our other bandplans) is available on WX3K.#NOCAL.CA.USA.NOAM BBS. A REQFIL request to fetch ncpa\bandplan.12 will retrieve it for you.

73 John
WX3K

140. Re: [NETSIG:324] Re: 1.2GHz bandplan

From: dwolf@tcet.unt.edu (Dave Wolf)
Date: Sun, 20 Nov 94 10:48:48 CST
To: netsig@tapr.org
Message-ID: <9411201648.AA123106@tcet.unt.edu>
Rendered body type: text/plain

>
> A copy of the Northern California 1200MHz bandplan (and any of
> our other bandplans) is available on WX3K.#NOCAL.CA.USA.NOAM BBS.
> A REQFIL request to fetch ncpa\bandplan.12 will retrieve it for
> you.
>
> 73 John
> WX3K
>
Thanks!

141. Re: [NETSIG:323] HIERARCHICAL WRAP-UP

From: MAK5656@delphi.com
Date: Sun, 20 Nov 1994 12:59:50 -0500 (EST)
To: netsig@tapr.org
Message-ID: <01HJPBOJXLZ69D54UP@delphi.com>
Rendered body type: text/plain

Dave nohave not been privy to all that has been posted prior as you know.
So, you probably have had someone speak in our areas's behalf, but incase not
jdont forget STX. is a legitmateitimate area dregion currently in sueuse for sout texas.

73 Mate!

Mike/KF5PX

142. Re: [NETSIG:323] HIERARCHICAL WRAP-UP

From: K0HYD@aol.com
Date: Sun, 20 Nov 1994 21:07:46 -0500
To: netsig@tapr.org
Message-ID: <941120210432_3760123@aol.com>
Rendered body type: text/plain

Dave, here's the layout in Kansas.

Hierarchical ADDR
0 -- #SCKS.KS.USA.NOAM
1 -- #NEKS.KS.USA.NOAM
2 -- #NCKS.KS.USA.NOAM
3 -- #NWKS.KS.USA.NOAM
4 -- #SWKS.KS.USA.NOAM
5 -- #SEKS.KS.USA.NOAM

The corresponding TCPIP Subnets are presently:

44.122.0/24
44.122.1/24
44.122.2/24
44.122.3/24
44.122.4/24
44.122.5/24

We may go to a county by county IP Subnet scheme, however, there are plenty
of addresses left in the present scheme.

Hope to see you again in St. Louis.

73 de Dale
k0hyd@k0hyd.@#scks.ks.usa.noam
Kansas IP Addr Coordinator
44.122.0.4

143. Re: [NETSIG:323] HIERARCHICAL WRAP-UP

From: hank_oredson@MENTORG.COM (Hank Oredson)
Date: Mon, 21 Nov 94 09:55:24 PST
To: netsig@tapr.org
Message-ID: <9411210955.ZM1264@hanko>
Rendered body type: text/plain

On Nov 20, 9:30am, Dave Wolf wrote:
> Subject: [NETSIG:323] HIERARCHICAL WRAP-UP
> If you 've been following the SIGs for a while, you may remember that
> a proposal for 'standardization' of hierarchical addressing is now open
> for comment and input. A copy of this proposal is in the current Packet
> Status Register (TAPR's quarterly journal). An electronic version is
> avail in the archives or if you request a copy, I'll be happy to e-mail
> one to you (dwolf@tcet.unt.edu). A printed copy may be obtained from
> the TAPR office, too.

Where are the archives, and how do I get something from them?

Tried ftp to tapr.org, got "unknown host" ...

Suspect others might have this same problem.

   ... Hank

--

Hank Oredson @ Mentor Graphics   Library Operations
Internet   : hank_oredson@mentorg.com   "Parts 'R Us!"
Amateur Radio: W0RLI@W0RLI.OR.USA.NOAM

144. New WWW page

From: bruce@pixar.com (Bruce Perens)
Date: Mon, 21 Nov 94 13:26 PST
To: netsig@tapr.org
Message-ID: <m0r9gGE-0005oCC@mongo.pixar.com>
Rendered body type: text/plain

I put up a new WWW page with access to various Amateur Radio files on
passing the 20 WPM code exam, Motorola modifications, Alinco mods and
manuals, and a bit of TEKK stuff.

The page has a URL of http://www.rahul.net/perens .

Or, if your mail reader understands HTML...
use this link.

If you have Amateur Radio papers you'd like published on the Web,
please e-mail them to me. I accept ASCII and HTML formats, and of
course I prefer HTML. One caveat: I may put commercials in my pages
to help pay the internet provider's bill.

        Thanks

        Bruce Perens
--

Bruce Perens AB6YM

Voice phone: 510-215-3502 Internet: Bruce@Pixar.com
Amateur Radio TCP/IP: Bruce@ab6ym.ampr.org
Amateur Radio BBS network: ab6ym@n0ary.#nocal.ca.usa.noam

145. Re: [NETSIG:329] New WWW page

From: Glenn Elmore <glenne@eagle.sr.hp.com>
Date: Mon, 21 Nov 1994 13:49:11 -0800 (PST)
To: netsig@tapr.org
Message-ID: <9411212149.AA13625@eagle.sr.hp.com>
Rendered body type: text/plain

>
> If you have Amateur Radio papers you'd like published on the Web,
> please e-mail them to me. I accept ASCII and HTML formats, and of
> course I prefer HTML. One caveat: I may put commercials in my pages
> to help pay the internet provider's bill.

You want postscript of 4 of my CNC papers? I don't mind you pointing at
col.hp.com ~hamradio/packet/n6gn/arrlcnc. For that matter there's quite
a bit of other stuff there too. I don't have time to make it all HTML
though. Mosaic figures out the .ps extensions on the files OK for me
though...

Glenn

146. TEKK tests

From: crompton@nadc.nadc.navy.mil (D. Crompton)
Date: Mon, 21 Nov 94 17:05:28 -0500
To: netsig@tapr.org
Message-ID: <9411212205.AA10762@nadc.nadc.navy.mil>
Rendered body type: text/plain

Ok here is an analysis of two TEKK transceivers that just arrived.

Transceiver #1 - model #KS-900 (black box) SN9697

TX - .8 watts at 7.5volts @ 400ma
      2 watts at 10v

All spurious signals down 75 dB or better @7.5v, 80 dB @ 10v

132mv P-P for 3Khz deviation, 1Khz mod freq.
132mv P-P for 2.2 kHz "   , 5kHz "   "

For ~ 2.7db rolloff 1/5 kHz

TX distortion not measured, very low.

RX - 3kHz deviation / 1kHz rate

     -106.3 dBm / 20 db quieting   (-107dBm = 1 uV)
     -110 dBm / 10 dB S+N/N

     Distortion 3kHz deviation, -80 dBm

    Mod freq   Distortion %
       1   2.9
       2   3.4
       3   6.3
       4   9.3
       5   7.4

Trnasceiver #2 - model #KS-900 SN 9701

TX - .9 watts at 7.5 volts @ 400ma
      2 watts at 10 volts

No further TX checks run as this is going to be run as a receiver

RX - 3 kHz deviation / 1 kHz rate

    -106 dBm / 20 dB quieting
    -111 dBm / 10 dB S+N/N

   Distortion 3 kHz deviation, -80 dBm

   Mod freq.   Distortion %
      1   4.75
      2   11
      3   16.1
      4   18.4
      5   21.4

As you can see the RX distortion leaves something to be desired. I
actually ended up using the better RX of the two units for my receiver.
The transmitters looked quite good. Very clean and easy to tune. No
modifications were made to the units for these tests.

We may replace the Murata filters with the flatter units. Has anyone
seen this RX distortion problem? The recovered audio actually starts
to look like a triangle wave at 5Khz or so.

Also for TX output - watch how you measure (and use) this. The
difference between a 1 foot and 4 foot length of RG58 to the
wattmeter results in several tenths of a watt additional loss.
When TEKK specs these things it is power at the connector and
from what I have seen here most units do have 2 watts at the
connector at 10.0 volts. So short (small coax) connections are
a necessity at 440 mHz, that is unless you need the loss.

Doug

147. Re: [NETSIG:328] Re: HIERARCHICAL WRAP-UP

From: Greg Jones <gjones@tenet.edu>
Date: Mon, 21 Nov 1994 16:24:39 -0600 (CST)
To: netsig@tapr.org
Message-ID: <199411212224.QAA12815@Kay-Abernathy.tenet.edu>
Rendered body type: text/plain

Send e-mail to 'listserv@tapr.org'
In the body put, index -all

This will get you all the files currently on the system.

iThen the command will be:

get area filename

I think it is
get bbssig hierahical

The ftp site currently is at hereford.ampr.org. ftp.tapr.org will be setup
sometime by the end of the year when we are finally on the machine we have
been heading for the last few months.

Greg

According to Hank Oredson:
>
> On Nov 20, 9:30am, Dave Wolf wrote:
> > Subject: [NETSIG:323] HIERARCHICAL WRAP-UP
> > If you 've been following the SIGs for a while, you may remember that
> > a proposal for 'standardization' of hierarchical addressing is now open
> > for comment and input. A copy of this proposal is in the current Packet
> > Status Register (TAPR's quarterly journal). An electronic version is
> > avail in the archives or if you request a copy, I'll be happy to e-mail
> > one to you (dwolf@tcet.unt.edu). A printed copy may be obtained from
> > the TAPR office, too.
>
> Where are the archives, and how do I get something from them?
>
> Tried ftp to tapr.org, got "unknown host" ...
>
> Suspect others might have this same problem.
>
>   ... Hank
>
>
>
> --
>
> Hank Oredson @ Mentor Graphics   Library Operations
> Internet   : hank_oredson@mentorg.com   "Parts 'R Us!"
> Amateur Radio: W0RLI@W0RLI.OR.USA.NOAM
>

148. Pactor Forwarding Partners?

From: MAK5656@delphi.com
Date: Mon, 21 Nov 1994 23:34:42 -0500 (EST)
To: netsig@tapr.org
Message-ID: <01HJRC7N0HH4986802@delphi.com>
Rendered body type: text/plain

Howdy...my name is Mike and my call is KF5PX. I run an MSYS packet bbs station

in Corpus Christi, TX. I am looking to open an HF port on 20 meters with an

emphasis on the Northeastern States and Europe. Mode will be Pactor...

I need some stations that are interested in a partner located in South Texas

that would be receptive to me forwarding personal traffic through their

station...NOT bulletins, but personal traffic and NTS traffic.

With my proximity to Mexico, I could serve as a decent gateway from the North

to South American bound traffic...If you are interested, I can be reached at:

AX-25: KF5PX @ KF5PX.#STX.TX.USA.NOAM

E-Mail: MAK5656 @ Delphi.Com

Fax: 1-512-993-7531

Thanks..I will be on one frequency initially, so if you are interested, tell me

where you will be. MSYS supports compression compatability with both FBB as

well as RLI softwares.

73/Mike

149. Re: [NETSIG:323] HIERARCHICAL WRAP-UP

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Tue, 22 Nov 1994 08:17:32 -0700 (MST)
To: netsig@tapr.org
Message-ID: <Pine.SUN.3.90.941122081309.13446B-100000@kazak>
Rendered body type: text/plain

Hi Dave, not sure I summarized my input from the Great State of
New Mexico. But it is simple. We have so few bbs in this state it's not
useful to have area designators. So you should see none. But it is
possible for a bbs to decide for some reason to use a #NENM or like that
it will not effect the mail in any way.

73, karl, k5di@k5di.nm.usa.noam

150. Re: [NETSIG:304] Re: More NEDA ????

From: fuseki!mtewe!vodall@hprwp.fc.hp.com
Date: Tue, 22 Nov 1994 20:15:10 -0700 (MST)
To: netsig@tapr.org
Message-ID: <m0rA8Ap-0002dKC@mtewe.kevin.mt.us>
Rendered body type: text/plain

>
> Can someone give me an explanation of what NEDA is?

Several years ago, on the way home from Dayton, I put out a call on
146.52 simplex. I was answered by several fellows also leaving Dayton
heading for Seattle. It turned out that they were originally involved
in NEDA. I left the encounter with a NEDA annual and quarterly publication.

Those two books taught me far more about packet and how to do things so
it works than anything I'd read or experienced before. I still consider
the NEDA annual the bible of packet radio.

They expound on concepts like treating packet more like cellular phones
with small connected cells instead of gonzo mountain top nodes that
hear everybody and everything. What is good for voice repeaters is
not good for packet. The annual is full of definitions, descriptions,
equipment mods and networking techniques. Anybody who is attempting
to work on a packet network without at least reading the NEDA manual
is missing out.

> I think it is some dictorial , do it my way or not at all
> group in New England - also WAS?? very anti TCP/IP

They publish standards and recognize conforming nodes. That's not
a bad thing. I hate rules and government control more than most -
but I also appreciate and respect the reasons for this control. When
folks put up their own UHF link on a dedicated NODE backbone frequency, as is
happening in Montana, everybody suffers a big drop in throughput. Organization
and control helps to prevent this and to keep the packets flowing.

The first manual I received mentioned IP and it was fairly obvious they
weren't too happy about it. The 94 annual goes into detail describing it
and it's uses. I think they've seen the light - or at least a glint on
the horizon.

They still advocate IP stations being on access frequencies to the
network separate from the AX25 users. Which is a little restricting but

makes sense to me as improved performance for all users should be the result.

Harold and others have been bemoaning the poor performance of packet radio.
I believe it's only half due to equipment AND SOFTWARE not keeping up. The
other half is due to the gross use we make of the equipment available.
Trying to build a network on a single frequency where the relays (nodes)
compete with the users, and where most of the users and nodes can't hear each
other, is almost obscene. No wonder we only get C.P.S. rates in the low single
digits and the pro's scoff.

Now if only NEDA would recognize that digital repeaters are one of the
magic bullets for improved packet radio performance. Of course - in a system
with small cells and full duplex links - it's not needed. Not like out here
in the west where some mountaintop nodes have a hundred mile or more RADIUS
communications range and it's the rare exception when any two of the users
can hear each other.

NEDA isn't perfect (nobody is...) but they're the best I've seen yet for
useful packet networking information.

> Doug

--

Bill

Temporary-Reply-To: vodall%mtewe%fuseki@hprwp.fc.hp.com
Reply-To: vodall@bigsky.dillon.mt.us
Amateur Packet: wa7nwp@n7see.mt.usa.noam

151. (no subject)

From: fwar1@cc.bellcore.com
Date: Wed, 23 Nov 1994 11:41:24 -0500
Message-ID: <199411231641.AA10435@bulkrate.cc.bellcore.com>
Rendered body type: text/plain

I'm out of the office until 29 November.

Have a GREAT Thanksgiving.

Imeadiate problems to Bruce Schaeffer on (201) 740-4221.

You will only see this once and I'll see your mail on my return.

Frank Warren

152. FW: packet radio networking

From: "Battles, Brian, WS1O" <bbattles@arrl.org>
Date: Wed, 23 Nov 94 14:57:00 EST
To: TAPR NETSIG <NETSIG@tapr.org>
Message-ID: <2ED39FAE@arrl.org>
Rendered body type: text/plain

Can anyone offer suggestions to this gentleman from Romania?

Thanks...

From: ip
To: bbattles
Subject: packet radio networking

     I'm trying to design a project for a packet radio network with a
server/gateway in the University network and with more ports/freqs to allow
different speed connections, from amateurs to other universities/high
schools in the area. The first design was to operate only in 2m and 70cm at
1200 and 9600, but I'd like to know from you some solutions to use also
higher speeds. We have the basic from the computer side of station (PC386
with Linux), but for the radio side it depends on the modem we choose. We
read about GRAPES 56kbs RF modem sold by Georgia Radio Amateur Packet
Enthusiasts Society for about $250US. I'd like to know your opinion for the
radio side of the gateway/server, for a transverter that works at these
frequencies and switches from TX to RX and back fast enough, and for the
hardware between the two to coordinate the radio network and gateway
operations.
    For the networking scheme we'd like to use TCP/IP, as inside the
University network. For the moment, the software choice is the KA9Q NOS
program under Linux, but we intend to allow the possibility, mostly for the
amateur users, of a multiprotocol packet network and I'd like to ask your
opinion about if they have to configure AX.25<->TCP/IP gateways in the net

or if the gateway should route all kinds of packets.
    The network area that can be reached by the gateway should be around 20 km, but I'd like to know some good repeater hard/software solutions in case of extended needs.
    Thank you in advance!

Sincerely,
Ionel I. Pusca
Polytechnic University of Bucharest
Computer Science
Roearn: ip@roearn.ici.ro
PUB: ip@cs.pub.ro & ip@pub.ro
Bitnet/EARN: IONUTP@ROIPB.BITNET

153. info/question on duplexors

From: crompton@nadc.nadc.navy.mil (D. Crompton)
Date: Wed, 23 Nov 94 16:15:00 -0500
To: netsig@tapr.org
Message-ID: <9411232115.AA29799@nadc.nadc.navy.mil>
Rendered body type: text/plain

I am putting together a TEKK based 9600 baud repeater. Actually it is together and I am curious what duplexors or TX/RX seperation others are using. I had a Phelps Dodge (Celwave) 633 - which is not the best duplexor. It has about 55dB isolation. The noise floor of the TEKK precludes going much below -88dBm with this duplexor which is unacceptable. What are others using/doing? We though of building a notch or bandpass and putting it in the TX line before the power amp. - Currently I am running a 20 Watt brick on the TEKK. Not much difference though between using it or not with this noise floor problem. TX is very clean otherwise and in fact the noise floor is probably normal I just need more isolation. Got a FAX from Phelps Dodge on their other duplexors and see a PD526 with 110-120 dB isolation, but I am sure a hefty price tag.

Anyone have ideas on how to solve this one and not go the better duplexor route. That is using a single antenna. Since the TEKK does not have that great of a front-end sensitivity wise I really wanted to put a GasFet preamp on it but that would add another 15-20dB of needed TX isolation. 120dB sure would be nice - but at that level other isolations come into play. Even 100dB would give me the edge. A 40-50 dB notch in the transmit leg at the RX freq might do it.

Doug

154. Re: [NETSIG:335] Re: More NEDA ????

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Wed, 23 Nov 1994 15:43:10 -0700 (MST)
To: netsig@tapr.org
Message-ID: <Pine.SUN.3.90.941123153321.5510A-100000@kazak>
Rendered body type: text/plain

On Wed, 23 Nov 1994 fuseki!mtewe!vodall@hprwp.fc.hp.com wrote:

> in NEDA. I left the encounter with a NEDA annual and quarterly publication.
>
> Those two books taught me far more about packet and how to do things so
> it works than anything I'd read or experienced before. I still consider
> the NEDA annual the bible of packet radio.
>
> They expound on concepts like treating packet more like cellular phones
> with small connected cells instead of gonzo mountain top nodes that
> hear everybody and everything. What is good for voice repeaters is

        Much removed......

        Form what I have read of the NEDA information it's good information if you live in densly populated areas. Out west in a state larger than ALL of New England but having about 1 million population, it is far too expensive a solution! We are lucky to have simplex nodes with the X1J software that cover about 1/2 the state of New Mexico. This is not bad since there are large counties with NO hams of any kind living in them.

        So we don't NEED NEDA.

-karl k5di

155. [NETSIG:388] info/question on duplexors.

From: wb9mjn@uugate.wa7slg.ampr.org
Date: Thu, 24 Nov 94 07:33:35 mdt
To: netsig@tapr.org
Message-ID: <28886@uugate.wa7slg.ampr.org>
Rendered body type: text/plain

Hi. You have stumbled upon one of the basic reepeater problems. Once the equipment is to the level where the transmitter carrier is low enuf at the reciever port, that the reciever should be working, many times it does not because of transmitter noise. The transmitter carrier is attenuated by the duplexing network sufficiently. But transmitter noise usually requires much more attenuation than a duplexor provides.

I solved this problem in the 56 KB full duplex link radio built here in about a week. Here s how it was solved. Obtain from a scrap MICOR, one of the exciter filters. These are 6 resonator filters. At a 8 Mhz split they have about 55 dB attenuation. That is, a UHF mobile MICOR is where u will find these exciter filters. To obtain that narrow band pass spec, the filters are loosely coupled, and the whole filter has an attenuation of 6 dB at pass band center. With a 5 Mhz split u may need more than one filter. And of course, after the filter, u will need a Power Amp to bring the signal back up. Details of the 56 KB FDX radio line up (for 430) are in the file CELLNET.UPT which is available on the network in various places. The atten-uation of the transmitter noise on the reciever channel is the sum of the duplexor attenuation from TX port to RX port and the attenuation of the noise by the above mentioned exciter filter. In our 56 KB FDX radio, the transmitter noise was attenuated to -135 dBm on the reciever channel, with 10 watts out.

Many commercial rigs have exciter filtering built in. This is generally a good idea, since radios operating in close proximity, as when two cars using radios are side by side on the highway, can cause the transmitter noise problem as well. With repeater splits, and good quality recievers, desense from the other stations carrier is usually taken care of by the multi resonator reciever front end filter. So, in the better commercial radios, u should be able to find the exciter filtering u need for ur project.

73, Don. wb9mjn%wb9mjn.ampr.org@wb9uus.bradley.edu

156. [NETSIG:338] info/question on duplexors

From: steve.diggs@totrbbs.atl.ga.us (Steve Diggs)
Date: Tue, 24 Nov 94 09:22:00 -0500
To: netsig@tapr.org
Message-ID: <133.7.uupcb@totrbbs.atl.ga.us>
Rendered body type: text/plain

-> Date: Wed, 23 Nov 94 15:23 CST
-> From: wa4mei!emory!nadc.nadc.navy.mil!crompton (D. Crompton)

-> I am putting together a TEKK based 9600 baud repeater. Actually it is
-> together and I am curious what duplexors or TX/RX seperation others
-> are using. I had a Phelps Dodge (Celwave) 633 - which is not the best

Saw your note and as a LAN group operating much the same setup as you, thought I would reply. We are using a Paccom Sprint-2 TNC driving a TEKK KS-960 which has been mod'ed for 9600 operation per Paccom's suggestion. (TEKK actually performed the mod) The KS-960 drives an RF Concepts D-26 PA, which gives about 60 watts into our antenna system. Antenna is a Diamond X-510, 82' above ground level. The site is on top of a small mountain East of Atlanta. The only other RF on our tower is a 1200bps digipeater about 25 feet above this antenna.

I don't understand the necessity for duplexing in the setup described. I think you jumped into your problem without giving some of the background as to *why* you need duplexing. What other RF is on your site? Are you duplexing the operation of your antenna along with 9600? Please explain what is the source of the adjacent channel noise you are trying to eliminate. Also, are you operating simplex or duplex? (We're simplex, probably going duplex when traffic demands it)

Look forward to hearing more.

Regards,
Steve Diggs, KB4ZTN
President, East Atlanta LAN

```
---
Top Of The Rock BBS - Lilburn, GA         SYSOP: Steve Diggs
UUCP: totrbbs.atl.ga.us              Snailmail: 4181 Wash Lee Ct.
Phone: +1 404 921 8687                          Lilburn, GA 30247-7407
```

157. Re: [NETSIG:340] info/question on duplexors.

From: wa3dsp@wa3dsp.ampr.org (Doug Crompton - Richboro, PA - [44.80.08.120])
Date: Thu, 24 Nov 94 16:35:13 GMT
To: netsig@tapr.org
Message-ID: <48526@wa3dsp.ampr.org>
Rendered body type: text/plain

Thanks to Don for the filter info. I knew this was the right direction
but I was interested in what others were doing. I have about an
8 pole helical filter from a Japaneese comercial 2 way that might
work. It should certainly handle the 1-2 watts from my exciter. Will
have to see how it goes.

On the other question - think it was from Steve - This IS a full
duplex site - I.E. it can receive data on one frequency and
retransmit it simutaneously - a few bits delayed on another freq.
in other words a full duplex digital repeater, the basis of which
is a TAPR modem. It therefore requires the operation of an RX/TX
in this case at the same site with the same antenna.

Happy Thanksgiving, Doug

158. Re: [NETSIG:339] Re: More NEDA ????

From: fuseki!mtewe!vodall@hprwp.fc.hp.com
Date: Thu, 24 Nov 1994 10:24:33 -0700 (MST)
To: netsig@tapr.org
Message-ID: <m0rAhuN-0002dKC@mtewe.kevin.mt.us>
Rendered body type: text/plain

>
>
> Out west in a state
> larger than ALL of New England but having about 1 million population, it
> is far too expensive a solution! We are lucky to have simplex nodes with
> the X1J software that cover about 1/2 the state of New Mexico. This is
> not bad since there are large counties with NO hams of any kind living in
> them.
>
>   So we don't NEED NEDA.
>
> -karl k5di
>

I mostly agree. The same situation exists in Montana where about 10 major
mountain top simplex nodes cover the entire state. We probably don't need
the "RULES".. Though it might not hurt. Most of the nodes in the state
(except mine :-)) would benefit from parameter tweaking. Heck - as far
as I can tell that applies almost everywhere... Even noticed a minor
misconfiguration in the major Denver node stack since I've been visiting
the area.

It may be interesting to note that Montana's official packet organization
died of neglect this year. The group of folks working on the UHF backbone
have consciously decided to not organize. It would just get in the way
of progress.

In addition, I see where many many packet users give up in disgust
with the system. It's usually a lack of information on how to use
what we have and not knowing what's there rather than true problems
with the packet network. Maybe it's time to start an "educational"
organization.

On the subject of simplex systems; while cheap and easy, a network like
this is, how do I say it diplomatically, "throughput challenged"!!!   My
hypothesis is that if the mountain top VHF simplex sites were replaced
with UHF digitial regenerating repeaters and backyard node stacks (ala NEDA)
were used to link the repeaters and access the system - we'd have a major
increase in performance.

It wouldn't have optimum performance as a full-duplex dedicated frequency
system would have - but it would only require a single good radio and optionally
a TNC at a remote site instead of a minimum of 3 radios and 3 TNC's. When the
extra expense, small number of supporting users (user?), hours on the road and

snowmobile maintenance is considered - I believe it's a reasonable compromise.

Besides - with only one radio you don't have to worry about desensing. Thanks to all who replied to my previous posting. The consensious was unanimous for adding cavities to the system. Hopefully we'll dig up some to add next summer along with separating the antennas. For now - we're restricted to what's on hand and what can fit in a pocket of a hikers backpack. Following the excellent advice to do it digital rather than analog I'm going to forget the idea of bleeding audio between the two receivers (didn't get any hints of how to do it anyway) and figure out how to cross connect a couple TNC's DCD hardware. I'll be able to try it at home first to see if it's worthwhile. Thanks to Doug's MAXWAIT mods the need has been greatly reduced - at least for the 2 IP'ers on channel. Since the interference is not from other packet users I can crank the AX25 MAXWAIT value way down (10 seconds) and not be hogging the channel. Sure is a lot better than watching the NOS box count down for minutes while both the uplink and interfering channels are completely quiet. (Tnx Doug!!!) Still I think we'll have better throughput by waiting for a clear spot instead of retrying often with packets that can't possibly get through.

I'm getting way too long winded... Must be the anticipation of too much turkey this afternoon... Happy Turkey-day everybody.

--

Bill

Temporary-Reply-To: vodall%mtewe%fuseki@hprwp.fc.hp.com
Reply-To: vodall@bigsky.dillon.mt.us
Amateur Packet: wa7nwp@n7see.mt.usa.noam

159. [NETSIG:343] Re: More NEDA ????

From: steve.diggs@totrbbs.atl.ga.us (Steve Diggs)
Date: Tue, 24 Nov 94 17:37:00 -0500
To: netsig@tapr.org
Message-ID: <139.7.uupcb@totrbbs.atl.ga.us>
Rendered body type: text/plain

-> > Out west in a state
-> > larger than ALL of New England but having about 1 million
-> population, it > is far too expensive a solution! We are lucky to
-> have simplex nodes with > the X1J software that cover about 1/2 the
-> state of New Mexico. This is > not bad since there are large counties
-> with NO hams of any kind living in > them.
-> >
-> > So we don't NEED NEDA.
-> >
-> > -karl k5di

Thought I'd kick in some thoughts on this subject. We recently had an experienced NEDA NODE_OP move into the area, N9XO, Brian McCarthy. Brian brought to us a wealth of experience in the NEDA approach, along with a lot of NEDA documentation. I poured over the docs. and read with envy the extensive nature of the NEDA system. Our system here in Georgia is crude in comparison. I think, though, that the NEDA system is a direct reflection of both the topography and population distribution of the area. As Karl notes, it wouldn't get it in NM and I don't think it hold much promise in Georgia, either. It takes a homogenous spread of population to have small areas have enough hams to put up a BBS and set up a connection to the backbone. We don't have that arrangement here in Georgia. The 5 county Atlanta area comprises 70% or so of the state population and we have many, many hams here in Atlanta. BTW we have only two (2) PBBS's to serve the entire community. (And we have a hard time keeping those up, too!) What we need is high capacity links, because we don't have the interest level to set up many small BBS systems.

We hope to operate a three-tier system in Atlanta: 1200 bps for the newbies, 9600 to take up the upscale growth and be the user channel of the future, and 56kbps as our backbone.

-> On the subject of simplex systems; while cheap and easy, a network
-> like this is, how do I say it diplomatically, "throughput
-> challenged"!!!   My hypothesis is that if the mountain top VHF
-> simplex sites were replaced with UHF digitial regenerating repeaters
-> and backyard node stacks (ala NEDA) were used to link the repeaters
-> and access the system - we'd have a major increase in performance.

Interesting comment. Nothing personal, but I seem to hear the same kind of hogwash here also. In packet, it seems there are two schools: the

theorists who are constantly proposing the complex as a "snap" to
operate, and the rest who are left to make ANYTHING operate dependably.
A duplex digi is one complicated system; a simplex 9600 digi is
something most any packet group and get up and running. If it gets them
started and moves the group forward, then it did the job. It can then be
improved to full duplex ops. as the details are mastered. We'll probably
pursue that course.

I still marvel at the quantity of technical innovations that come out of
this hobby, (specially packet) and the extreme shortage of folks who are
willing to spend weekends getting systems to work.

I hope everybody takes this in a positive spirit; I certainly intend it
that way. I'd love to hear other packet groups feelings on these issues.

Regards,
Steve Diggs
East Atlanta LAN

Top Of The Rock BBS - Lilburn, GA SYSOP: Steve Diggs
UUCP: totrbbs.atl.ga.us Snailmail: 4181 Wash Lee Ct.
Phone: +1 404 921 8687 Lilburn, GA 30247-7407

160. [NETSIG:342] Re: info/question on duplexors.

From: steve.diggs@totrbbs.atl.ga.us (Steve Diggs)
Date: Tue, 24 Nov 94 17:17:00 -0500
To: netsig@tapr.org
Message-ID: <138.7.uupcb@totrbbs.atl.ga.us>
Rendered body type: text/plain

-> On the other question - think it was from Steve - This IS a full
-> duplex site - I.E. it can receive data on one frequency and
-> retransmit it simutaneously - a few bits delayed on another freq. in
-> other words a full duplex digital repeater, the basis of which is a
-> TAPR modem. It therefore requires the operation of an RX/TX in this
-> case at the same site with the same antenna.

After thinking the situation through, I realized that had to be the
setup. Are you using the TAPR 9600 modem with regen option?

I have a GE Mastr II that I plan on using in the system somewhere. I've
been told it can be readily set up for full duplex operation without use
of an external duplexer.

When you get the full duplex digi up and running, please give us all a
report on how it worked out.

Regards,

Steve D.

Top Of The Rock BBS - Lilburn, GA SYSOP: Steve Diggs
UUCP: totrbbs.atl.ga.us Snailmail: 4181 Wash Lee Ct.
Phone: +1 404 921 8687 Lilburn, GA 30247-7407

161. Re: [NETSIG:338] info/question on duplexors

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Fri, 25 Nov 1994 06:15:10 -0700 (MST)
To: netsig@tapr.org
Message-ID: <Pine.SUN.3.90.941125060700.25023B-100000@kazak>
Rendered body type: text/plain

Doug I just got to your message. I assume your using 2 TEKK
radios, one for receive and one for transmitt only. My thoughts are these:

        A GasFet preamp will buy you isolation from desense, but only if
you adjust the stage gains properly AFTER adding the pre-amp. And it's
not more than perhaps 10 dB.

        Look around ham auctions and hamfests for a "large", non mobile
use duplexer. I have 2 and paid $50 each for them. Had to modify them a
bit as they were made for 410-420 mhz region. With care you can get your
120 dB isolation with these.

-karl
k5di

162. Some hiers for Florida

From: imotion@iu.net (Howard Goldstein)
Date: Fri, 25 Nov 1994 13:09:36 -0500
To: netsig@tapr.org
Message-ID: <199411251813.NAA22332@bb.iu.net>
Rendered body type: text/plain

Someone was asking about hiers in Florida. I don't have the whole list, and there is no widely used standard .#xxx arrangement here.

A few I'm familiar with:

```
        #stu and #stufl   (stuart fl)
        #vrb and #vrbfl   (vero beach)
        #mlb and #mlbfl   (melbourne)
        #avo              (avon park)
        #dab and #dabfl   (daytona bch)
        #citfl            (citrus county <gulf coast N of St pete>)
```

#xxx and #xxxFL appear to be used interchangeably w/o regard to any standard.

163. G8BPQ Switch version 4.08

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Sun, 27 Nov 1994 03:21:31 -0700 (MST)
To: Sig Networking <netsig@tapr.org>
Message-ID: <Pine.SUN.3.90.941127030620.15004A-100000@kazak>
Rendered body type: text/plain

Today I got around to loading the latest version of the wonderful BPQ switch. Looking at changes I noticed that John Wiseman has added a feature that allows Windows programs to access the switch.

I believe that soon there will be a Window version of the F6FBB packet radio BBS, because John-Paul said there is going to be. And that is why BPQ has this feature.

Anyway I am running the dos versions of the f6fbb bbs and JNOS in windows and load the BPQ switch software before windows so both software can attach to the switch. When I tried out the new BPQ it caused my windows to stop with an error message before loading. The error message said it was having problems with bpqcode.386 and could'nt find it and thus was having a problem.

I have not yet found the secret to how to load this new switch when your running windows. When I do it will show up here and in a message to g8bpq. John is a wonderful programmer and thus is very poor at clear writing. I have to read every sentense of his writing 4 times to be sure I understand...

-karl k5di

164. Subnet thoughts

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Sun, 27 Nov 1994 13:12:43 -0700 (MST)
To: NOS-BBS Sig <nos-bbs@hydra.carleton.ca>
Cc: Sig Networking <netsig@tapr.org>
Message-ID: <Pine.SUN.3.90.941127114056.17549B-100000@kazak>
Rendered body type: text/plain

Dale K0HYD asked some good questions and has some good ideas. But it's clear that Dale has had little experiance with subnet design and just plain setting up ham routers...hi The other guys who have offered help seem to be in the same boat.

So please think about this. EVERY user of the routers must connect to one of them. Each user must have at least an ARP ADD on the router and at least an ip statement that INCLUDES his ip number! It can be a subnet block like 44.123.0.0/16 or 44.123.34.0/24 but it must include the user's ip number.

Now to transfer the tcp packets between routers is SIMPLE if subnets are used, or hard if not. Consider the not subnet case and lets say the user above is w3aa with ip 44.123.34.50. His router is a jnos ham with call w3bb and ip of 44.123.34.100. The second router is w3cc and has the ip number 44.123.34.150.

The user w3aa has arp add 44.123.34.100 ax25 w3bb ax0 so that his packets will find the router w3bb. He must also have an ip route which may well be explicit like route add 44.123.34.100 ax0 and that sets him up.

User w3aa can ping his router w3bb. But he can ping nothing else unless w5bb puts in ip and arp routings that GET HIS PACKETS TO, AND BACK FROM w3cc. Here is where it gets bad. W3BB must do the following:

He has a route back to w3aa so now a route to

Well this has become to hard to do. The art of routing is one still learned in college and guys get jobs based on their demonstrated abilities to design subnets and set up/ design routers. Anyone that has used a Cisco Router knows it's a full blown computer with 30 rs-232 ports and a fast HD with ALL the ip addresses in the world. Cisco Inc. has a good business solving the router problems of the world.

I'm not going to do it here for a few hams. At least not now. Maybe later, after I fully understand the uses for a netmask...and yes you need one at the end of your router chain.

-karl

165. Re: [NETSIG:348] G8BPQ Switch version 4.08

From: makinc@hhcs.gov.au (Carl Makin)
Date: Mon, 28 Nov 1994 10:21:20 +1100
To: netsig@tapr.org
Message-ID: <199411272346.KAA20360@sserve.cc.adfa.oz.au>
Rendered body type: text/plain

At 4:29 AM 27/11/94 -0600, Klarsen wrote:

> can attach to the switch. When I tried out the new BPQ it caused my
> windows to stop with an error message before loading. The error message
> said it was having problems with bpqcode.386 and could'nt find it and
> thus was having a problem.

Make sure the bpqcode.386 file (and the other one, I've fogotten the name) are in the \windows directory. John says this in the changes file with bpq 4.08.

Carl.

--
Carl Makin (VK1KCM) "Speaking for myself only!"
makinc@hhcs.gov.au 'Work +61 6 289 8443' Canberra, Australia
'The entire concept of daylight savings time is like trying to make
yourself taller by cutting off your head and standing on it.' - Usenet Oracle

166. Re: [NETSIG:348] G8BPQ Switch version 4.08

From: srbible@cs.nps.navy.mil (Steven R. Bible)
Date: Sun, 27 Nov 1994 19:55:30 -0800
To: netsig@tapr.org
Message-ID: <9411280355.AA09161@taurus.cs.nps.navy.mil>
Rendered body type: text/plain

>Today I got around to loading the latest version of the wonderful
>BPQ switch. Looking at changes I noticed that John Wiseman has added a
>feature that allows Windows programs to access the switch.
^^^^^^^^^^^^^^^^

How? via Winsock version 1.1?

Steve, N7HPR

srbible@cs.nps.navy.mil
Naval Postgraduate School, Monterey, CA 93943

167. Re: [NETSIG:351] Re: G8BPQ Switch version 4.08

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Mon, 28 Nov 1994 07:41:04 -0700 (MST)
To: netsig@tapr.org
Message-ID: <Pine.SUN.3.90.941128073446.26634D-100000@kazak>
Rendered body type: text/plain

On Sun, 27 Nov 1994, Steven R. Bible wrote:

>
> >Today I got around to loading the latest version of the wonderful

> >BPQ switch. Looking at changes I noticed that John Wiseman has added a
> >feature that allows Windows programs to access the switch.
>   ^^^^^^^^^^^^^^^^
>
> How? via Winsock version 1.1?
>
>
> Steve, N7HPR

        No I don't think so. It seems that a REAL Windows program does
have a protected ram shell and so if that REAL program needed to connect
to the "application" side of the Switch it could not. Now plain DOS
programs like the F6FBB bbs software do talk to the Switch out of their
DOS windows. I load the BPQ Switch high before I load windows Steve. Both
JNOS and FBB are connected to it. The Port side connects out com ports
and to a DRSI card in my case.

-karl

>
> srbible@cs.nps.navy.mil
> Naval Postgraduate School, Monterey, CA 93943
>
>

168. Re: [NETSIG:350] Re: G8BPQ Switch version 4.08

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Mon, 28 Nov 1994 07:28:12 -0700 (MST)
To: netsig@tapr.org
Message-ID: <Pine.SUN.3.90.941128072541.26634B-100000@kazak>
Rendered body type: text/plain

On Sun, 27 Nov 1994, Carl Makin wrote:

> At 4:29 AM 27/11/94 -0600, Klarsen wrote:
>
> > can attach to the switch. When I tried out the new BPQ it caused my
> > windows to stop with an error message before loading. The error message
> > said it was having problems with bpqcode.386 and could'nt find it and
> > thus was having a problem.
>
> Make sure the bpqcode.386 file (and the other one, I've fogotten the name)
> are in the \windows directory. John says this in the changes file with bpq
> 4.08.
>
>
> Carl.
        I have both files in the \windows\system directory like he sort
of says in his paper winbpq.doc, along with a lot of code...hi

-karl

169. Subnet networking

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Mon, 28 Nov 1994 09:18:49 -0700 (MST)
To: Sig Networking <netsig@tapr.org>
Cc: NOS-BBS Sig <nos-bbs@hydra.carleton.ca>
Message-ID: <Pine.SUN.3.90.941128084955.27765A-100000@kazak>
Rendered body type: text/plain

I think for clarity I should explain what we are trying to do
here in the El Paso, TX south-central part of NM. As you all know if you
turn off your computer, or turn of nos to use the computer for another
purpose you can have problems. Some nos save the netrom table so that you
can start using netrom, but only if the nodes your using have still got
YOU listed.

        If you have any ax.25 routes to local guys they are there
whenever you come on. You can be off a month and netrom has forgot you
all over the place, but that local guy is right there the moment you come on.

        This is what I am trying to do. Using the X1J nodes that have a
tcp router installed, and nos I have set up an ax.25 only router system
over an area of over 100 miles by 100 miles. Now this morning I learned
that what I have is a "STATIC" router. This is, it seems, akin to being a
model T mechanic in 1995. We should aspire to have a "DYNAMIC" router.
This is something we can learn to do.

Mike says that the static router can be learned in an afternoon. That makes me feel bad cuzz it took 2 hams experimenting for 4 weekends to get our static system working. I and ka5oyo worked real hard and learned a lot. I still fail to see how anyone can call even the static router "simple".

What does the static router do for you? Two basic things. If your off the air for a month and then come back on, your immediately connected to the entire network! And you can set up the routers so you can send data faster through the router in a X1J node than you can using netrom.

This evening I am going to demo packet radio at the local club. Assuming my ht will connect to my node at home, I will come up as nos with the call k5di-10. I have a "static" routing for that call, both an ip and arp line (It seems the definition of "static" is when you use arp add you are making a "static" arp entry). When I come on I should be able to ping EVERYONE! I hope the students get home from Thanksgiving and turn on the gateway. I can then show off that device too since it's a ax.25 path to it.

So this is what we have here now. It works. If static is bad then the routers we have are bad. But they WORK!

73, karl k5di

170. Re: [NETSIG:354] Re: G8BPQ Switch version 4.08

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Mon, 28 Nov 1994 09:33:47 -0700 (MST)
To: netsig@tapr.org
Message-ID: <Pine.SUN.3.90.941128093045.27765C-100000@kazak>
Rendered body type: text/plain

Well at this time I have both files that are associated with the bpq version 4.08 windows thing in both the \windows and \windows\system directory and it still comes up with an error message.

I think a line in system.ini or win.ini is required but don't see any referance to that anywhere....

73, karl k5di

171. Re: [NETSIG:355] Subnet networking

From: David Rush <rush@cacfs.ks.erg.sri.com>
Date: Mon, 28 Nov 94 11:18:30 -0600
To: netsig@tapr.org
Cc: rush
Message-ID: <9411281718.AA04821@cacfs.ks.erg.sri.com>
Rendered body type: text/plain

Karl:

> This evening I am going to demo packet radio at the local club.
>Assuming my ht will connect to my node at home, I will come up as nos
>with the call k5di-10. I have a "static" routing for that call, both an
>ip and arp line (It seems the definition of "static" is when you use arp
>add you are making a "static" arp entry). When I come on I should be able
>to ping EVERYONE! I hope the students get home from Thanksgiving and turn
>on the gateway. I can then show off that device too since it's a ax.25
>path to it.

This will work for getting your packets out, but not "EVERONE" will know to route to your k5di-10 system thru your home system.

David, N0OXH

172. G8BPQ

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Mon, 28 Nov 1994 10:25:44 -0700 (MST)
To: Sig Networking <netsig@tapr.org>
Message-ID: <Pine.SUN.3.90.941128102252.29056A-100000@kazak>
Rendered body type: text/plain

I seem to have misplaced my carefully preserved e-mail address for John Wiseman, G8BPQ. Does anyone have it?
Please pass it along...

73, karl

173. Re: [NETSIG:357] Re: Subnet networking

From: Tim Baggett <tim@nmsu.edu>
Date: Mon, 28 Nov 1994 10:32:52 -0700 (MST)
To: netsig@tapr.org
Message-ID: <Pine.3.87.9411281052.B21524-0100000@wilma>
Rendered body type: text/plain

On Mon, 28 Nov 1994, David Rush wrote:

> >   This evening I am going to demo packet radio at the local club.
> >Assuming my ht will connect to my node at home, I will come up as nos
> >with the call k5di-10. I have a "static" routing for that call, both an
> >ip and arp line (It seems the definition of "static" is when you use arp
> >add you are making a "static" arp entry). When I come on I should be able
> >to ping EVERYONE! I hope the students get home from Thanksgiving and turn
> >on the gateway. I can then show off that device too since it's a ax.25
> >path to it.
>
> This will work for getting your packets out, but not "EVERONE" will know
> to route to your k5di-10 system thru your home system.
>
> David, N0OXH
>

uh-huh. This is a disadvantage to static routing. Let me know if I need
to set a return IP route from the gateway. Otherwise the return packets
will drop into the bit bucket.

With OSPF the route would be learned (at least as far as I understand
OSPF). With better subnetting, the packet could at least be sent into the
correct area where static routes could then be managed easier.

Adding a single route add line for every other IP user is a bit too much
to do. Too tedious, and you will never get a fully connected network that
way. As for ARP entries, ARP discovery should do the trick. NETWRONG ARP
entries may have to be manually added, but AX25 do not, and should not.
ARP stands for Address Resolution Protocol - let it do it's work and
resolve the link level address.

73
Tim, AA5DF

New Mexico State University Telemetering Center
Las Cruces, NM

174. Mods necessary for low-serial-numbered KS900L?

From: laborde@kilroy.Jpl.Nasa.Gov (Gregory R. LaBorde)
Date: Mon, 28 Nov 94 09:48:03 PST
To: netsig@tapr.org
Message-ID: <9411281748.AA16725@kilroy.Jpl.Nasa.Gov>
Rendered body type: text/plain

I have been following the discussion of the two TEKK radios with interest.
It sounds as if the KS-900L is a good performer, right out of the box, with
only one mod for improving weak-signal performance that is not even
neccessary for most situations. I have a KS-900L that I am getting ready to
put on the air, but it has a very low serial number (000521) compared to
those I've been seeing here (99XX). This radio was one of the original
group purchased through Mike (WD6EHR) Curtis's original effort, that I
repurchased from Gary Lau N6MMM. Gary says he tested the radio within his
house, but it has never communicated to the LA-area network. I would
appreciate any insight on how this radio might differ from recent and
current incarnations of the KS-900L, and any advice for modifying it to
improve performance.

Thanks,
Greg

--
Gregory R. LaBorde - KD6MSM | Internet: laborde@kilroy.jpl.nasa.gov
Jet Propulsion Laboratory | AMPRNet : kd6msm@jpl-gw.w6vio.ampr.org
Systems Engineering - Galileo OET | Packet : KD6MSM@W6VIO.#SOCA.CA.USA.NA
M/S 264-805 4800 Oak Grove Drive | Phone : (818) 393-1107
Pasadena, CA 91109 |

175. Re: [NETSIG:355] Subnet networking

From: ron@chaos.eng.wayne.edu (Ron Atkinson)
Date: Mon, 28 Nov 1994 14:47:13 -0500 (EST)
To: netsig@tapr.org
Message-ID: <9411281947.AA04915@chaos.NIS.chaos>
Rendered body type: text/plain

My mailer said Klarsen said this:
>
>   Mike says that the static router can be learned in an afternoon.
> That makes me feel bad cuzz it took 2 hams experimenting for 4 weekends
> to get our static system working. I and ka5oyo worked real hard and
> learned a lot. I still fail to see how anyone can call even the static
> router "simple".

The problem sounds more like your stuck with teh limited capability of
an X1J node. We don't ever considering running anything as simple as
this around my area. All systems are NOS or Unix based and a few like
my systems can learn a route automatically. We also never manually
put in ARP statements for other stations. If anyone came on the air for
the first time the systems learn their hardware address and they have
connectivity. They can even change their hardware address and on a few
systems around town here they can change ports on the fly too. The
key for making a dynamic system like this work is to not put in manual
ARP statements for people. If you're stuck using a system that can't
learn hardware addresses via ARP, I'd consider replacing it with one
that does.

Ron Atkinson N8FOW

AMPRnet : n8fow@n8fow.ampr.org
Internet : ron@chaos.eng.wayne.edu
           aa011@detroit.freenet.org

176. FYI

From: crompton@nadc.nadc.navy.mil (D. Crompton)
Date: Mon, 28 Nov 94 15:13:10 -0500
To: netsig@tapr.org
Message-ID: <9411282013.AA07585@nadc.nadc.navy.mil>
Rendered body type: text/plain

Since many of you do not subsribe to tcp-group I thought
that the following messages might be helpful in hte realm
of subnet discussions....

        Date: Mon, 28 Nov 1994 08:29:20 -0800
        From: brian@nothing.ucsd.edu (Brian Kantor)
        Message-Id: <199411281629.IAA21769@nothing.ucsd.edu>
        To: tcp-group@UCSD.EDU
        Subject: Re: Should we share?

        >And to think you guys have 24 bits per _state_ .... <sigh>

        They don't. In the USA the top 10 bits (not 8) are reserved for
        coordinator blocks - that means that people have 14 bits per block,
        NOT 16. I've stated this many times, yet people go on out and make
        up their grand and glorious subnetting schemes that waste addresses
        like rainwater assuming they have the full range of 0-255 in the
        C byte. Nope, guys, you've got 0-63 for now, and someone else may
        well get 64-127, 128-191, or 192-255 in the future. Tread lightly.

        But this begs the question:
        IP routing should NOT be used instead of routing at the AX.25 level.
        This is one of the grossest lacks in the KA9Q package (and everything
        derived from it, as far as I know).

        I divided up the network 44 address space for ADMINISTRATIVE convenience,
        NOT for routing purposes. Few if any of the existing amateur networks
        physically follow convenient subnetting boundaries. Localized subnets
        should rarely be necessary.

        Within an area, it's clear that routing between frequencies, "lans",
        and access ports should be done BELOW the IP level - at AX.25 or
        Net/Rom or Texnet or ROSE or whatever you're using to make the local
        area one big happy family. If this isn't working, that's the problem
        that needs to be fixed - using IP routing to get around it is just
        sticking a "band-aid" over the wound, not curing it.

        Oh, and this "transport network' routing needs to be done automatically.

If you do it right, the regional router isn't going to have more than
1023 entries in its IP network routing table, and quite likely many fewer.

Using manually-defined IP subnets to connect up parts of regions is
clearly going to bite us in the back really hard one of these days. As
someone commented when they said, "looks like a Cisco router" - it
doesn't scale. We have one of the largest and most fragmented networks
in the world, and we need to do this right if it's going to work at all
well.

Let's see if we can't do something towards eliminating all these
unneeded IP subnet routes.
        - Brian
Date: Mon, 28 Nov 1994 08:37:28 -0800
From: brian@nothing.ucsd.edu (Brian Kantor)
Message-Id: <199411281637.IAA21899@nothing.ucsd.edu>
To: tcp-group@UCSD.EDU
Cc: peter@globv1.hacktic.nl
Subject: Re: Should we share?
Newsgroups: mail.tcp-group
In-Reply-To: <m0rAlhb-0004BnC@globv1.hacktic.nl>
References: <9411230329.AA00152@wattle.itd.adelaide.edu.au>
Organization: The Avant-Garde of the Now, Ltd.

Current statistics:

There are about 200 gateways between the Internet and the AMPRNet in
various regions of the world.

There are about 23 000 registered hosts on the AMPRNet.
        - Brian

177. G8BPQ Hand-holding

From: "Kenneth F. Jones" <0003672208@mcimail.com>
Date: Mon, 28 Nov 94 13:44 EST
To: netsig <netsig@tapr.org>
Message-ID: <01941128184410/0003672208NA4EM@MCIMAIL.COM>
Rendered body type: text/plain

Is there a G8BPQ FAQ floating around?
I'm new to the software (for that matter, new to much beyond
'plug the TNC in here') and I need an Elmer to help me
get this mess working. Club is thinking of replacing
KA-Node with real stuff. I'm exploring G8BPQ 4.0x and
also AA4RE BBS on top.
I am able to operate REBBS on an AEA tnc, although the
personal forwarding isn't ironed out yet. I can't run G8BPQ on
same hardware. BPQCODE runs, appears to address TNC but does not.
Data goes to bit bucket.
Query where is the bit bucket, and how do I put a lid on it?
More to the point, in what state should a TNC be (only
external TNC here, no DRSI etc) at program start? Seems to be
no intercommunication.
Questions questions questions
Pointers to file repositories gladly accepted; all answers
appreciated. Thanks a bunch!

Ken Jones KB3JA
3672208@MCIMail.com

178. Re: [NETSIG:361] Re: Subnet networking

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Mon, 28 Nov 1994 16:20:43 -0700 (MST)
To: netsig@tapr.org
Message-ID: <Pine.SUN.3.90.941128160946.5925B-100000@kazak>
Rendered body type: text/plain

On Mon, 28 Nov 1994, Ron Atkinson wrote:

        Some deleted

>
> The problem sounds more like your stuck with teh limited capability of
> an X1J node.
        I am afraid you come from a very rich area and can afford to put
unix boxes on your mountain-top sites. We live in the mountain zone where
snow is known to fall in quantities of 25 feet every year. At several
sites we use solar panel power and we can just get by with a TEKK radio

and a tnc-2. The X1J node you hold in such contempt is all we can, and
ever will run at those sites!

  We don't ever considering running anything as simple as
> this around my area. All systems are NOS or Unix based and a few like
> my systems can learn a route automatically. We also never manually
> put in ARP statements for other stations. If anyone came on the air for
> the first time the systems learn their hardware address and they have
> connectivity. They can even change their hardware address and on a few
> systems around town here they can change ports on the fly too. The
> key for making a dynamic system like this work is to not put in manual
> ARP statements for people. If you're stuck using a system that can't
> learn hardware addresses via ARP, I'd consider replacing it with one
> that does.
>
> ------------
>
> Ron Atkinson N8FOW
>
> AMPRnet : n8fow@n8fow.ampr.org
> Internet : ron@chaos.eng.wayne.edu
>   aa011@detroit.freenet.org
>
>
        Well Ron we are stuck with our X1J stuff and I read the manual
and yes it will NOT make arp entries from broadcasts. So we are stuck
with our model-T system. But it does work. And pretty well too.

73, karl k5di

179. Re: [NETSIG:363] G8BPQ Hand-holding

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Mon, 28 Nov 1994 16:42:48 -0700 (MST)
To: netsig@tapr.org
Message-ID: <Pine.SUN.3.90.941128162859.5925D-100000@kazak>
Rendered body type: text/plain

On Mon, 28 Nov 1994, Kenneth F. Jones wrote:

> Is there a G8BPQ FAQ floating around?

        No FAQ on the G8BPQ switch, sorry. But if you read the *.doc and
play around a bit you will get it going and working fine. Do this:

        1. Put your TNC into the KISS mode. Then with your BPQ switch
control file called bpqcfg.txt, set up a port that talks via a com port
to that KISS TNC. That will get your switch working to the tnc and out
your radio to the world.

        2. In bpqcfg.txt have at least 1 fake com port set up before you
get to the REAL port. Now using the bpqcfg.exe compiler make a bpqcfg.bin
file. If something is wrong the thing will tell you what it is. When it
is happy then load the switch by typing bpqcode at the dos prompt. This
gets the swich going.

        3. Use the pac4.exe program and connect to the switch and test it
out. When you can connect to nearby nodes and such the switch is working.
You will see your swich callsign on the nearby route tables.

        4. Now load the aa4re bbs software. The .doc with this software
tells you how to connect to the switch. It is a lot like majick! It just
does and works fine.!

        Don't worry about testing and trying new things with the switch.
It will work as long as it can and quit if you get too much wrong...hi

73, karl k5di

> I'm new to the software (for that matter, new to much beyond
> 'plug the TNC in here') and I need an Elmer to help me
> get this mess working. Club is thinking of replacing
> KA-Node with real stuff. I'm exploring G8BPQ 4.0x and
> also AA4RE BBS on top.
> I am able to operate REBBS on an AEA tnc, although the
> personal forwarding isn't ironed out yet. I can't run G8BPQ on
> same hardware. BPQCODE runs, appears to address TNC but does not.

> Data goes to bit bucket.
> Query where is the bit bucket, and how do I put a lid on it?
> More to the point, in what state should a TNC be (only
> external TNC here, no DRSI etc) at program start? Seems to be
> no intercommunication.
> Questions questions questions
> Pointers to file repositories gladly accepted; all answers
> appreciated. Thanks a bunch!
>
> Ken Jones KB3JA
> 3672208@MCIMail.com
>
>

180. Re: [NETSIG:363] G8BPQ Hand-holding

From: dwolf@tcet.unt.edu (Dave Wolf)
Date: Mon, 28 Nov 94 18:26:13 CST
To: netsig@tapr.org
Message-ID: <9411290026.AA123551@tcet.unt.edu>
Rendered body type: text/plain

Make sure the TNC is in KISS mode and the hardware part of BPQ is set up
properly (correct com port address and hardware IRQ).

The other very important thing is to make sure that aa4re software is
reconfig'd to 'talk' to the host interrupt of BPQ (usually 127). This
is done in your ports section of PARMS.BB
Most common error, I think!

73 and GL de Dave

181. Re: [NETSIG:364] Re: Subnet networking

From: rmackay@bud.peinet.pe.ca (Ron VE1AIC)
Date: Mon, 28 Nov 1994 22:59:16 -0400
To: netsig@tapr.org
Message-ID: <9411290259.AA05373@bud.peinet.pe.ca>
Rendered body type: text/plain

>
>
>On Mon, 28 Nov 1994, Ron Atkinson wrote:
>
>   Some deleted
>
> We don't ever considering running anything as simple as
>> this around my area. All systems are NOS or Unix based and a few like
(deleted
>> If you're stuck using a system that can't
>> learn hardware addresses via ARP, I'd consider replacing it with one
>> that does.
>>
>> Ron Atkinson N8FOW
>>
>>
>>
>   Well Ron we are stuck with our X1J stuff and I read the manual
>and yes it will NOT make arp entries from broadcasts. So we are stuck
>with our model-T system. But it does work. And pretty well too.
>
>73, karl k5di
>
>
Karl & Ron, I had played with the X1J router here and not getting very far
(no pun). We're not NOS/Unix rich either so it seems a good topic for a X1J
"Guru" to give us some pointers on getting the best from this half of the
X1J TheNet.
Anyone got this beast tamed?
73 - Ron VE1AIC

182. Re: [NETSIG:364] Re: Subnet networking

From: ron@chaos.eng.wayne.edu (Ron Atkinson)
Date: Mon, 28 Nov 1994 22:43:52 -0500 (EST)
To: netsig@tapr.org
Message-ID: <9411290343.AA05757@chaos.NIS.chaos>
Rendered body type: text/plain

My mailer said Klarsen said this:
>

> Well Ron we are stuck with our X1J stuff and I read the manual
> and yes it will NOT make arp entries from broadcasts. So we are stuck
> with our model-T system. But it does work. And pretty well too.

I understand your situation with the environment and that you can't just
put a computer at a site, but you might really want to think about
how you've implemented your system. Many people make the same mistake.

First dig up the older CNC papers and look for the ones with NETROM and
TCP/IP in them. NETROM was not implemented in KA9Q NET/NOS so that everyone
can run a NETROM node, it was to allow you to transport IP frames through
a NETROM network. Typically in a normal network there would be a LAN of
TCP/IP users and one station on that LAN will also have a port on a
different frequency with a NETROM node and that person will become the
gateway to the NETROM network and allow the LAN's IP traffic to 'hitch a
ride'. Since X1J can't generate it's own ARP frames, it's never going to
be a very good IP switch and you're stuck with very limited capabilities.
I assume that you use the node to talk to another LAN that is distant
from you (you have a backbone link on it to another node somewhere
probably quite a few miles away). What you should do to make thinks a
bit more dynamic is have 1 station, or just a few stations around town,
with slightly different coverage areas (dont' put your next door neighbor
on the same freq as you on the node) go to the frequency with the X1J
node. Run 9600 or higher (I think you already have that), and that's it!
Keep only a few people on that frequency and don't let everyone else on.
Now each station that is on that frequency can all have ports on other
frequencies and there are no ARP entries required for anyone else. The
only ARP statements that need to exist (manual ones) are for those
that are acting as the routers to the LAN frequencies. I'm sure you have
enough capability to do this right now and believe me, you will noticed
an improvement in networking and thruput. This is basically how most
people do TCP/IP around Southeast Michigan. We don't believe in the
'user ports on high sites' that once existed around here and have proven
to be a failure. Make the high site a switch only site and put the LAN's
on smaller sites around town. Thruput goes up, hidden terminals go away,
you're on your way to a making a network rather than everyone all trying
to site on 'the node frequency', etc... It can be implemented right now
with what you have without additional cost or equipment.

An Internet example of the above would be, the X1J is a Cisco, the
router stations that are on the frequency with the X1J are acting as a
hub/router, and the users are on a LAN with a default route via their
local routers.

--

Ron Atkinson N8FOW

AMPRnet : n8fow@n8fow.ampr.org
Internet : ron@chaos.eng.wayne.edu
aa011@detroit.freenet.org

183. Re: [NETSIG:368] Re: Subnet networking

From: wa3dsp@wa3dsp.ampr.org (Doug Crompton - Richboro, PA - [44.80.08.120])
Date: Tue, 29 Nov 94 04:29:49 GMT
To: netsig@tapr.org
Message-ID: <49555@wa3dsp.ampr.org>
Rendered body type: text/plain

We are fortunate enough out here to have full NOS implementations
at our sites. I do have a comment about the X1J's though. If you
are just going to use them as point to point routers (and I agree
they should not do to much more than that) then why use IP at all
at that level. Why not use native netrom with large paclen's. That
is 1024 or so bytes - assuming they will not talk to any non X1J
sites, which would be limited to 256.

This has a number of advantages, one of which is dynamic routing.
It will find a path, allow dynamic backup paths, and find a
return path, without much user intervention.

The downside is that it is VC mode and thus requires point to
point acks. This may not be a downside in many cases though. At
high baud rates in may be a small penalty.

At the endpoints or hop-off points of such a system you could either
use IP or netrom.

Doug

184. 9600 & 1200 at same location?

From: mmunster@qualcomm.com (Marvin Munster x5388)
Date: Tue, 29 Nov 1994 09:17:59 -0700
To: netsig@tapr.org
Message-ID: <ab0102083c0210040769@[129.46.12.181]>
Rendered body type: text/plain

I am looking for information and others experience in running a 9600 bps
node along with an existing 1200 bps node. These will be 2 meter user
ports and co-located in the same building.

What should be considered when setting these two stations up?
I know we will need a couple of notch filter cans.
How about duplexing?
Any problems there?
Any operating problems?
I will be using X1J2 firmware.
Paramater changes?

Any input will help.

Thanks.
Marvin - WB6PKK
mmunster@qualcomm.com
WB6PKK @ KJ6VC.#SOCA.CA.NA

185. Re: [NETSIG:367] Re: Subnet networking

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Tue, 29 Nov 1994 13:20:08 -0700 (MST)
To: netsig@tapr.org
Message-ID: <Pine.SUN.3.90.941129131500.18748A-100000@kazak>
Rendered body type: text/plain

Ron, I have 2 x1j nodes running and no problems. I did nothing
special either. The ipbroadcast must be ipbroacast=255.255.255.255 or
your stuff will not work. The best test to see if you have it set up
properly is to ping the node from your nos. Until you can ping the darn
thing it's got a setup problem.

        So good luck and if you have a specific problem please drop it
here in the sig so someone can help you.

        73, de karl k5di@k5di.nm.usa.noam
                k5di@arl.mil
                        klarsen@acca.nmsu.edu
                                1:305/111 on The Fido net

        Bill Gates DOS and Windows may be poor software, but the facts
speak for themselves. Bill Gates has more than a billion dollars. He
got that money from selling DOS and Windows...

186. Re: [NETSIG:369] Re: Subnet networking

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Tue, 29 Nov 1994 13:33:21 -0700 (MST)
To: netsig@tapr.org
Message-ID: <Pine.SUN.3.90.941129132430.18748B-100000@kazak>
Rendered body type: text/plain

Doug we have run tests of the path through a single simplex
netrom node and then through the same node using the X1J TCP system. We
tested it using the ftp of a large file. The average data transfer rate
for the netrom was 14 byte/sec. The average rate using tcp was 32
byte/sec. There was no other users on the node and we did this test twice
and got exactly the same numbers.

        It is possible we were better set up for the tcp case since we
have been "tuning" our jnos110g to maximize data rate using tcp.

        The final problem with netrom is it's requirement that your node
be present at both ends of the path. This gets in the way of many guys
trying to use and enjoy nos.

        73, de karl k5di@k5di.nm.usa.noam
                k5di@arl.mil
                        klarsen@acca.nmsu.edu
                                1:305/111 on The Fido net

Bill Gates DOS and Windows may be poor software, but the facts
speak for themselves. Bill Gates has more than a billion dollars. He
got that money from selling DOS and Windows...

187. Re: [NETSIG:370] 9600 & 1200 at same location?

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Tue, 29 Nov 1994 13:51:16 -0700 (MST)
To: netsig@tapr.org
Message-ID: <Pine.SUN.3.90.941129134639.18748C-100000@kazak>
Rendered body type: text/plain

Marvin I have 3 ports at home and 2 are 1200 baud and the third
is a 9600 baud. The 1200 baud are on 145.07 and 223.4 MHz and the 9600
baud is on 445.1 MHz. I have no problems at all. In fact the 2 meter
radio sits on top of the 223.4 radio!

Of course I have the G8BPQ switch in the computer and it connects
to the tnc's.

73, de karl k5di@k5di.nm.usa.noam
k5di@arl.mil
klarsen@acca.nmsu.edu
1:305/111 on The Fido net

Bill Gates DOS and Windows may be poor software, but the facts
speak for themselves. Bill Gates has more than a billion dollars. He
got that money from selling DOS and Windows...

188. Re: [NETSIG:373] Re: 9600 & 1200 at same location?

From: mmunster@qualcomm.com (Marvin Munster x5388)
Date: Tue, 29 Nov 1994 15:32:28 -0700
To: netsig@tapr.org
Message-ID: <ab015b584802100402dc@[129.46.12.181]>
Rendered body type: text/plain

Thanks for the information Karl, however the question I have is operating
in the same band. In this case, 1200 bps on 145.07 and 9600 bps (user
port) on something like 144.99. I don't think I will have any problems
with the 440 9600 bps network port.
Marvin.

At 2:06 PM 11/29/94, Klarsen wrote:
> Marvin I have 3 ports at home and 2 are 1200 baud and the third
>is a 9600 baud. The 1200 baud are on 145.07 and 223.4 MHz and the 9600
>baud is on 445.1 MHz. I have no problems at all. In fact the 2 meter
>radio sits on top of the 223.4 radio!
>
> Of course I have the G8BPQ switch in the computer and it connects
>to the tnc's.
>
>
> 73, de karl k5di@k5di.nm.usa.noam
> k5di@arl.mil
> klarsen@acca.nmsu.edu
> 1:305/111 on The Fido net
>
> Bill Gates DOS and Windows may be poor software, but the facts
>speak for themselves. Bill Gates has more than a billion dollars. He
>got that money from selling DOS and Windows...

Original text:

I am looking for information and others experience in running a 9600 bps
node along with an existing 1200 bps node. These will be 2 meter user
ports and co-located in the same building.

What should be considered when setting these two stations up?
I know we will need a couple of notch filter cans.
How about duplexing?
Any problems there?
Any operating problems?
I will be using X1J2 firmware.
Paramater changes?

Any input will help.

Thanks.

Marvin - WB6PKK
mmunster@qualcomm.com
WB6PKK @ KJ6VC.#SOCA.CA.NA

189. Re: [NETSIG:370] 9600 & 1200 at same location?

From: Sperry Davis <sperry@pinn.net>
Date: Wed, 30 Nov 1994 00:28:04 -0500 (EST)
To: netsig@tapr.org
Message-ID: <Pine.3.89.9411292304.A14472-0100000@everest>
Rendered body type: text/plain

Marvin,
   I am running a pair of 2 meter radios side by side. One 1200 baud
and one 9600. Both radios have a large GE bandpass cavity and good
grade of coax (9913). It is a downtown site, lots of rf, the radios
were both deaf without the cavities. Only by coincidence the frequencies
are 600khz apart. The antenna only have about six foot of seperation
the 9600 is a 4-el beam mounted below an omni.
   FYI, the kiss tnc's talk at 19.2k to a BPQ-4.08 + JNOS-110g box located
two stories below. The switch also has a TEKK @9600 and two 4-wire modem
links that piggy back on a microwave audio subcarrier to a tower/node
site 10 miles west of downtown.
   Two 2-meter radios are also at the tower site, actually four, one
packet node is duplexed with a voice repeater's receiver and another
node is duplexed with the repeater's transmitter. Two antennas used, but
they have 400' vertical seperation.

73,

Sperry/n4sd
  InterNet: sperry@pinn.net
  Amprnet: n4sd.ampr.org [44.62.64.40]
  PBBS: N4SD@WD4MIZ.#TIDE.VA.USA.NOAM

On Tue, 29 Nov 1994, Marvin Munster x5388 wrote:

> I am looking for information and others experience in running a 9600 bps
> node along with an existing 1200 bps node. These will be 2 meter user
> ports and co-located in the same building.
>

190. Re: [NETSIG:372] Re: Subnet networking

From: wa3dsp@wa3dsp.ampr.org (Doug Crompton - Richboro, PA - [44.80.08.120])
Date: Wed, 30 Nov 94 05:39:21 GMT
To: netsig@tapr.org
Message-ID: <49858@wa3dsp.ampr.org>
Rendered body type: text/plain

Karl,

 I assume that your were runing datagram mode for TCP in your
tests? Not sure why the netrom would be so much slower other
than the point-to-point acks that it requires.

Yes it does require nodes to propagate BUT you may have misunderstood
my proposed use - it would just be for subnet/network connection
under the control of sysops. This would be transparent to users who
would still use IP datagram at the local level to the switch.
Netrom does require nodes to propagate BUT if one end knows the way
to some distant node the return path is automatically built thru
temp entries. This is one way that IP users who want to use distant
switches, that do not know of their existence, can keep a circuit
to them listed. Simply ping (or do some IP activity) at least each
20 minutes or so. his could be done in NOS using the 'AT' command
to initiate a 0 data length ping.

It just seems like a shame to me to throw away the dynamic routing
capability of netrom in X1J when using it for regional connections
so long as it can be made to be as efficient as IP. This may not
be achievable but if you can get close it might be worth exploring.

You also did not mention the test setup for your tests. Was it
X1J to X1J? Did you set the MTU/PACLEN to a high value? I don't
even know if the X1J will allow netrom packets to be greater than
256?? I know MTU can be higher.

Doug

191. re: Subnet Networking (MTU)

From: "Robert E. Brose II" <bob@kunk.n0qbj.ampr.org>
Date: Wed, 30 Nov 1994 07:48:23 -0600 (CST)
To: netsig@tapr.org
Message-ID: <199411301348.AA01047@kunk.n0qbj.ampr.org>
Rendered body type: text/plain

User Doug Crompton - Richboro, PA - [44.80.08.120] says:
> You also did not mention the test setup for your tests. Was it
> X1J to X1J? Did you set the MTU/PACLEN to a high value? I don't
> even know if the X1J will allow netrom packets to be greater than
> 256?? I know MTU can be higher.

Doug and All,

N0BEL and I did some testing of this in Minneapolis. Our setup was as follows

I was running NOS talking to my TNC2 with X1J (rev1) via Kiss (effectivly
using the X1J as my kiss firmware)

My NOS station had an IP address of 44.94.249.29. The X1J had an IP address
of 44.94.249.254.

N0BEL's IP address was 44.94.249.2. We setup routes to force packets between us
to go into and out of the X1J, not through it.

On my NOS box
route addp 44.94.249.2 ax0 44.94.249.254 2
On his NOS box
route addp 44.94.249.29 ax0 44.94.249.254 2

on the X1J
IPR
44.94.249.2 port 0
44.94.249.29 port 1
ARP
44.94.249.29 AX25 N0QBJ DG
44.94.249.2 AX25 N0BEL DG

We then tried sending packets back and forth, changing the MTU on the X1J
between tests and it behaved as you would expect an IP router to.

As long as the received packets at the X1J were less than it's MTU, it
transmitted them whole. This worked going either way all the way up to
the X1J maximum of 1024 bytes. If the received packets were > the X1J MTU
it properly fragmented them before sending.

This seems to conflict with the docs in the X1H anyway. I don't remember
seeing comments about this in X1J docs.

Anyone have different experiences with this?

73, Bob
--
Robert E. Brose II   N0QBJ (WAMPES TCP/IP on 449.400, 430.150 and 144.990)
                        Amprnet: bob@n0qbj-uhf.ampr.org (44.94.9.9)
                        Packet: N0QBJ@WB0GDB.#STP.MN.USA.NOAM
Internet: EMAIL bob@os9.jriver.com   WWW http://www.jriver.com/~bob/

192. Re: [NETSIG:376] Re: Subnet networking

From: Klarsen <klarsen@acca.nmsu.edu>
Date: Wed, 30 Nov 1994 08:54:14 -0700 (MST)
To: netsig@tapr.org
Message-ID: <Pine.SUN.3.90.941130084135.651B-100000@kazak>
Rendered body type: text/plain

My .signature is getting in the way...

        73, de karl k5di@k5di.nm.usa.noam
                k5di@arl.mil
                        klarsen@acca.nmsu.edu
                                1:305/111 on The Fido net

        Bill Gates DOS and Windows may be poor software, but the facts
speak for themselves. Bill Gates has more than a billion dollars. He
got that money from selling DOS and Windows...

On Wed, 30 Nov 1994 wa3dsp@wa3dsp.ampr.org wrote:

> Karl,
>
> I assume that your were runing datagram mode for TCP in your
> tests? Not sure why the netrom would be so much slower other
> than the point-to-point acks that it requires.

        Yes we were using DataGram and had that declared in the X1J node.

>
> Yes it does require nodes to propagate BUT you may have misunderstood
> my proposed use - it would just be for subnet/network connection
> under the control of sysops. This would be transparent to users who
> would still use IP datagram at the local level to the switch.
> Netrom does require nodes to propagate BUT if one end knows the way
> to some distant node the return path is automatically built thru
> temp entries. This is one way that IP users who want to use distant
> switches, that do not know of their existence, can keep a circuit
> to them listed. Simply ping (or do some IP activity) at least each
> 20 minutes or so. his could be done in NOS using the 'AT' command
> to initiate a 0 data length ping.
>
        I have not tested this Doug but I have put netrom routes into the
X1J tcp section and they work fine. So since the node part is there all
the time sending nodelists, it would be no problem maintaining the route
between 2 distant X1J nodes. This will be fun to check out.

> It just seems like a shame to me to throw away the dynamic routing
> capability of netrom in X1J when using it for regional connections
> so long as it can be made to be as efficient as IP. This may not
> be achievable but if you can get close it might be worth exploring.
>
        Let's both try and see if it will work. I have 2 X1J nodes I
sysop that can be connected through ip routes through netrom.

> You also did not mention the test setup for your tests. Was it
> X1J to X1J? Did you set the MTU/PACLEN to a high value? I don't
> even know if the X1J will allow netrom packets to be greater than
> 256?? I know MTU can be higher.

        First it was jnos110g through X1J to jnos110g. We have been
working on speeding up the ftp rate with settings on the jnos. And yes we
must, due to the nature of netrom use no more than 230 bytes. The mtu we
use for the tcp route is 2048 I think. That is the reason for faster
service I would guess.

>
> Doug
>

193. Re: [NETSIG:370] 9600 & 1200 at same location?

From: Jack Taylor <n7oo@huachuca-emh8.army.mil>
Date: Wed, 30 Nov 94 9:57:02 MST
To: netsig@tapr.org
Message-ID: <m0rCsPY-0000k1C@dptspd.sat.datapoint.com>
Rendered body type: text/plain

Can't provide info regarding 1200 and 9600 on a stack in the same band,
but I've ran a 145.01/145.05/144.51-145.11 gateway here for years. It
works, but at times slowly.

If your 2M frequencies are separated by less than 500 KHz, notch filters
won't be much good, so don't waste money and effort with them. It is
extremely difficult (and expensive) to notch out frequencies much closer
than 500 KHz....

A solution I have been considering is to move the 145.11 full-duplex
radio up into the 147 MHz range and run 9k6. This would allow a freq
separation of over 2 MHz and be relatively simple/cheap to filter out
the interaction between it and the 145 MHz range stuff...

73 de Jack

194. Re: [NETSIG:375] Re: 9600 & 1200 at same location?

From: mmunster@qualcomm.com (Marvin Munster x5388)
Date: Wed, 30 Nov 1994 09:22:30 -0700
To: netsig@tapr.org
Message-ID: <ab02556201021004170b@[129.46.12.181]>
Rendered body type: text/plain

This is very impressive. This is exactly the kind of information that I am looking for. You guys seem to have quite a complicated set up, using microwave et.al.

I am hoping to eventually get set up where one of our hill tops has a 1200, 2 meter user prot (active now), 9600, 2 meter user port, 9600, 440 user port, and a 9600 or higher network link. We are also experimenting with a 10 GHz high speed link.

I am interested is any information that can be obtained on this subject, especially what trials and tribulations were involved, and what kind of equipment and equipment problems were encountered and how they were solved.

Marvin. - WB6PKK

>Marvin,
>   I am running a pair of 2 meter radios side by side. One 1200 baud
>and one 9600. Both radios have a large GE bandpass cavity and good
>grade of coax (9913). It is a downtown site, lots of rf, the radios
>were both deaf without the cavities. Only by coincidence the frequencies
>are 600khz apart. The antenna only have about six foot of seperation
>the 9600 is a 4-el beam mounted below an omni.
>   FYI, the kiss tnc's talk at 19.2k to a BPQ-4.08 + JNOS-110g box located
>two stories below. The switch also has a TEKK @9600 and two 4-wire modem
>links that piggy back on a microwave audio subcarrier to a tower/node
>site 10 miles west of downtown.
>   Two 2-meter radios are also at the tower site, actually four, one
>packet node is duplexed with a voice repeater's receiver and another
>node is duplexed with the repeater's transmitter. Two antennas used, but
>they have 400' vertical seperation.
>
>73,
>
>Sperry/n4sd
> InterNet: sperry@pinn.net
> Amprnet: n4sd.ampr.org [44.62.64.40]
> PBBS: N4SD@WD4MIZ.#TIDE.VA.USA.NOAM
>
>On Tue, 29 Nov 1994, Marvin Munster x5388 wrote:
>
>> I am looking for information and others experience in running a 9600 bps
>> node along with an existing 1200 bps node. These will be 2 meter user
>> ports and co-located in the same building.
>>

195. Re: [NETSIG:378] Re: Subnet networking

From: crompton@nadc.nadc.navy.mil (D. Crompton)
Date: Wed, 30 Nov 94 14:25:59 -0500
To: netsig@tapr.org
Message-ID: <9411301925.AA18075@nadc.nadc.navy.mil>
Rendered body type: text/plain

> And yes we
must, due to the nature of netrom use no more than 230 bytes. The mtu we use for the tcp route is 2048 I think. That is the reason for faster service I would guess.

This may only be a factor if you are talking to other true netroms. It is not a factor if two NOS netroms talk, as the paclen can be set to whatever you want. I was wondering if this limitation still stood for the X1x type nodes?

So if you had your own closed netrom system you could setup the values to be much more efficient.

Doug

December 1994

Original source file: netsig.9412
Source: http://ftp.tapr.org/tapr_history/SIG_Archives/netsig/mail_archive/netsig.9412

1. DRSI Dropping Amateur Products

From: tmoulton@ram.net
Date: Thu, 01 Dec 94 12:06:28 EST
To: netsig@tapr.org
Message-ID: <05823.15021573@RAMail>
Rendered body type: text/plain

I heard a rumor that DRSI (Clearwater, FL) is no longer supporting their
customers.

Has anyone else heard this?

I guess either they are soo busy they don't consider hams important...
or they are closing their doors...

neither is a pretty picture...

---

2. Re: [NETSIG:376] Re: Subnet networking

From: fuseki!mtewe!vodall@hprwp.fc.hp.com
Date: Wed, 30 Nov 1994 18:59:41 -0700 (MST)
To: netsig@tapr.org
Message-ID: <m0rD0oB-0002dKC@mtewe.kevin.mt.us>
Rendered body type: text/plain

Doug said:

> Yes it does require nodes to propagate BUT you may have misunderstood
> my proposed use - it would just be for subnet/network connection
> under the control of sysops. This would be transparent to users who
> would still use IP datagram at the local level to the switch.
> Netrom does require nodes to propagate BUT if one end knows the way
> to some distant node the return path is automatically built thru
> temp entries. This is one way that IP users who want to use distant
> switches, that do not know of their existence, can keep a circuit
> to them listed. Simply ping (or do some IP activity) at least each
> 20 minutes or so. his could be done in NOS using the 'AT' command
> to initiate a 0 data length ping.

Yes. And about a year ago we were doing exactly that. A station in
Bozeman (Montana) was pinging me (near the Canadian border) every X minutes
to keep the Netrom path alive. As long as that was going on - we could
exchange IP packets. Without it - I had no return path.

> It just seems like a shame to me to throw away the dynamic routing
> capability of netrom in X1J when using it for regional connections
> so long as it can be made to be as efficient as IP. This may not
> be achievable but if you can get close it might be worth exploring.

The 20 byte overhead and lack of datagram mode is a bugger. But the
real problem, in my opinion, is with Netrom's dynamic routing ability.
It doesn't work well. In fact - I've seen very few Thenet nodes where
several of the shown paths aren't bogus and should be hard coded out.

Montana's 145.010 system is full of nodes with one way paths, paths
that vary with the time of day and paths that change when E-skip happens.
Once a node hears an ID broadcast from a distant node - it thinks there's
a direct path. It keeps trying and trying and trying until it eventually
times out. Of couse - it usually hears one more ID and the cycle continues.
All the while - the path is broken and Level 3 (or is it 4) packets don't
get through. It's necessary to single hop from node to node to make
a connection.

Right now we can't IP to northern Wyoming because of this exact problem. A
packet gets to the Wyoming NODE but the reply, via NETROM, tries to take a
one-way path that isn't there. Sigh. Being able to FORCE a path with the
IP routing has often fixed a broken path. And when one of the Montana
nodes changes to X1J we'll be able to do exactly that.

If the Netroms were properly routed - using their dynamic routing ability
for IP would be a plus. As it is now, if we lose one node the path is
broken.

The TheNet 2.10 docs had a great (IMHO) discussion on how to play with the

Netrom Qualities so that known good nodes are manually locked at 192 (or the
appropriate value) while flakey paths come and go at 100 and are never
proppogated.   It's proven to work well where I've been able to convince
the folks to try it. Only problem is that it does require some tweaking
and attention as nodes come and go.

However, to get out from the 3, 4 or 5 c.p.s. throughput we need dedicated,
hidden-transmitter free, links between nodes. Then there's no reason not to
use direct IP on AX25 packets with large MTU sizes between the nodes.

> if the X1J will allow netrom packets to be greater than
> 256??

I don't think so...   Without large packets and guaranteed good paths I'm
afraid we're stuck with doing the routing manually to get around the overhead
of an extra 20 bytes per packet and extra NETROM-ACK packets.

It would still be very interesting to see exactly how much that overhead
hurts. What's the c.p.s. giving equal sized packets with and without
Datagrams?

>
> Doug
>

--

Bill - WA7NWP

Temporary-Reply-To: vodall%mtewe%fuseki@hprwp.fc.hp.com
Reply-To: vodall@bigsky.dillon.mt.us
Amateur Packet: wa7nwp@n7see.mt.usa.noam

3. Re: [NETSIG:379] Re: 9600 & 1200 at same location?

From: fuseki!mtewe!vodall@hprwp.fc.hp.com
Date: Wed, 30 Nov 1994 17:50:55 -0700 (MST)
To: netsig@tapr.org
Message-ID: <m0rCzje-0002dKC@mtewe.kevin.mt.us>
Rendered body type: text/plain

>
> Can't provide info regarding 1200 and 9600 on a stack in the same band,
> but I've ran a 145.01/145.05/144.51-145.11 gateway here for years. It
> works, but at times slowly.
>
> If your 2M frequencies are separated by less than 500 KHz, notch filters
> won't be much good, so don't waste money and effort with them. It is
> extremely difficult (and expensive) to notch out frequencies much closer
> than 500 KHz....
>
> A solution I have been considering is to move the 145.11 full-duplex
> radio up into the 147 MHz range and run 9k6. This would allow a freq
> separation of over 2 MHz and be relatively simple/cheap to filter out
> the interaction between it and the 145 MHz range stuff...
>
> 73 de Jack
>

This is good advice. And make sure you use good quality radios with as
much antenna separation as possible.

One question Jack: Do you already have filters on the full-duplex
system?

--

Bill - WA7NWP

Temporary-Reply-To: vodall%mtewe%fuseki@hprwp.fc.hp.com
Reply-To: vodall@bigsky.dillon.mt.us
Amateur Packet: wa7nwp@n7see.mt.usa.noam

4. Re: [NETSIG:372] Re: Subnet networking

From: fuseki!mtewe!vodall@hprwp.fc.hp.com
Date: Wed, 30 Nov 1994 18:15:51 -0700 (MST)
To: netsig@tapr.org
Message-ID: <m0rD07l-0002dKC@mtewe.kevin.mt.us>
Rendered body type: text/plain

>
>   we have run tests of the path through a single simplex
> netrom node and then through the same node using the X1J TCP system. We
> tested it using the ftp of a large file. The average data transfer rate
> for the netrom was 14 byte/sec. The average rate using tcp was 32
> byte/sec.

Finally....   Real numbers and real data to compare with. It's something
we seldom see in packet work. Must be because it's normally too
depressing.

A big question here is:

     Can the two systems exchanging data hear each other directly????

If not, then have you ever had trouble with the IP collisions between
packets once the CWINDOW gets larger than MSS. In my situation, the
returning IP ACK from the receiving system collides with the second
data packet from the transmitting system causing both systems to time out
and retry - thus killing throughput in a big way. The current HACK is
to force CWINDOW to never exceed one packet. Slows the transfers down
on longer hops but keeps the local traffic going a little faster.

When the 145.010 node is quiet and not desensing us - we sometimes get
peaks in the 15 c.p.s. range. Usually it's around 7. :-(

Part of our slow speed comes from using a MTU of 168 instead of 256.
That's another hack to reduce the long packets which are a little
more prone to dropping bits and a lot more prone to collisions. Some
day we'll get the backbone free of hidden transmitters and be able to
take advantage of the 1024 mtu limit of X1J's...

Due to the hidden transmitters and desense we use Virtual Circuit
mode on the uplink and Datagram on the downlink.

Other longer paths I have experience with using a combination of
IP on X1J's, UHF non-dedicated links and 145.010 "zoo" channels
give throughput in the 1 to 3 c.p.s. range.

I've never had the opportunity to see what the best possible is with
1200 baud packet on a clear channel. Or with 1K or bigger MTU packets?
Does anybody have some numbers to share?

I do know that after watching the performance of Calgary's Digital
Packet repeater for hours at a time - I want one... I'm expecting
it would be a 10x improvement.

>   It is possible we were better set up for the tcp case since we
> have been "tuning" our jnos110g to maximize data rate using tcp.

Each IP on Netrom packet has an additional 20 bytes of overhead in addition
to the 40 bytes of IP headers.   Additionally, if the MSS (or other??)
parameter wasn't adjusted, you may have been getting your IP data fragmented
into two Netrom packets. One of 256 bytes and one with just a few bytes
of data. A system can be optimized for either transport mechanism.

>   73, de karl k5di@k5di.nm.usa.noam

--

Bill - WA7NWP

Temporary-Reply-To: vodall%mtewe%fuseki@hprwp.fc.hp.com
Reply-To: vodall@bigsky.dillon.mt.us
Amateur Packet: wa7nwp@n7see.mt.usa.noam

5. Re: [NETSIG:385] Re: Subnet networking

From: Klarsen <k5di@acca.nmsu.edu>
Date: Thu, 1 Dec 1994 12:52:17 -0700 (MST)
To: netsig@tapr.org
Cc: TCP digest <tcp-group@ucsd.edu>
Message-ID: <Pine.SUN.3.90.941201123200.9214C-100000@kazak>
Rendered body type: text/plain

On Thu, 1 Dec 1994 fuseki!mtewe!vodall@hprwp.fc.hp.com wrote:

> >
> >   we have run tests of the path through a single simplex
> > netrom node and then through the same node using the X1J TCP system. We

> > tested it using the ftp of a large file. The average data transfer rate
> > for the netrom was 14 byte/sec. The average rate using tcp was 32
> > byte/sec.
>
> Finally.... Real numbers and real data to compare with. It's something
> we seldom see in packet work. Must be because it's normally too
> depressing.
>
> A big question here is:
>
>   Can the two systems exchanging data hear each other directly????

        No, in fact the path length was 150 miles total airline distance.

>
> If not, then have you ever had trouble with the IP collisions between
> packets once the CWINDOW gets larger than MSS. In my situation, the
> returning IP ACK from the receiving system collides with the second
> data packet from the transmitting system causing both systems to time out
> and retry - thus killing throughput in a big way.

        We had collisions or something, and nos would just quit. For like
15-30 minutes before the ftp would again start. Bill I think found that
problem which was the "tcp timeout" command. We looked it up and it
defaults to NO timeout!! So we made this function 30 seconds and that
solved most of the problem! Then we found another function I forget which
that we changed and got better performance. We learned you need to make
these changes BEFORE you do any attach statement or nos will still use
defaults! This I am sure has driven me and other hams up the wall!

        It DOES matter when you make changes to nos...

  The current HACK is
> to force CWINDOW to never exceed one packet. Slows the transfers down
> on longer hops but keeps the local traffic going a little faster.
>
> When the 145.010 node is quiet and not desensing us - we sometimes get
> peaks in the 15 c.p.s. range. Usually it's around 7. :-(
>

        Before we fixed things 3-5 were "GOOD"   :-(

> Part of our slow speed comes from using a MTU of 168 instead of 256.
> That's another hack to reduce the long packets which are a little
> more prone to dropping bits and a lot more prone to collisions.

        We use mtu=230 when working thru netrom and I think now that we
use 1024 when using tcp and the X1J (I think 1024 is the biggest you can
set) Also, I have NEVER dropped a bit due to a collision...it just slows
down things a lot!

  Some
> day we'll get the backbone free of hidden transmitters and be able to
> take advantage of the 1024 mtu limit of X1J's...
>
> Due to the hidden transmitters and desense we use Virtual Circuit
> mode on the uplink and Datagram on the downlink.
>
        We are sticking with Data Gram or DG. No good reason.

> Other longer paths I have experience with using a combination of
> IP on X1J's, UHF non-dedicated links and 145.010 "zoo" channels
> give throughput in the 1 to 3 c.p.s. range.
>
> I've never had the opportunity to see what the best possible is with
> 1200 baud packet on a clear channel. Or with 1K or bigger MTU packets?
> Does anybody have some numbers to share?
>
        That is what I reported on, 1200 baud clear channel.

> I do know that after watching the performance of Calgary's Digital
> Packet repeater for hours at a time - I want one... I'm expecting
> it would be a 10x improvement.

So I will send this both to the tcp-digest and this sig Bill
since the subject is nos and X1J stuff.

73, karl k5di

6. Re: [NETSIG:382] DRSI Dropping Amateur Products

From: Greg Jones <gjones@tenet.edu>
Date: Thu, 1 Dec 1994 17:34:06 -0600 (CST)
To: netsig@tapr.org
Message-ID: <199412012334.RAA12206@Kay-Abernathy.tenet.edu>
Rendered body type: text/plain

According to tmoulton@ram.net:
>
> I heard a rumor that DRSI (Clearwater, FL) is no longer supporting their
> customers.
>
> Has anyone else heard this?
>
> I guess either they are soo busy they don't consider hams important...
> or they are closing their doors...
>
> neither is a pretty picture...
>

I have also heard the same rumor that DRSI has stopped all amatuer products
and support and is only working on the commercial side...not sure if DRSI
folded and the products got moved to another company name or not.

The TAPR office got several calls this week from DRSI product owners saying
that someone at DRSI told them that we sold PCPA cards and associres. This
is not the case for anyone out their reading.

Andy is on the NETSIG group, I believe, so maybe he can give us the true
word.

It would make since that more money and less support to possible in the
commerical side of the equation.

Greg

7. Re: [NETSIG:382] DRSI Dropping Amateur Products

From: dwolf@tcet.unt.edu (Dave Wolf)
Date: Thu, 1 Dec 94 20:01:36 CST
To: netsig@tapr.org
Cc: bbssig@tapr.org
Message-ID: <9412020201.AA113343@tcet.unt.edu>
Rendered body type: text/plain

When I requested permission recently from DRSI for TAPR to use photos of
DRSI product in an upcoming book, I received a reply from Andy Demartini
of DRSI. It includeded these statements:
'Some time ago, DRSI notified all of its dealers that we have
discontinued all amateur radio products....

DRSI will continue to provide repair service and telephone support for
its amateur products in the field, but we have retired the designs and
no more will be built....'

Dave Wolf WO5H

8. RE: [NETSIG:382] DRSI Dropping Amateur Products

From: aed@drsi.com
Date: Thu, 1 Dec 94 20:24:17 EST
To: netsig@tapr.org
Message-ID: <Chameleon.4.00.4.941201213920.Postmaster@.drsi.com>
Rendered body type: text/plain

Reply To: Tom Moulton
          RAM Mobile Data, Inc.

>From: tmoulton@ram.net

        You recently wrote an open letter asking about DRSI -

>I heard a rumor that DRSI (Clearwater, FL) is no longer supporting their
>customers.

        This is certainly a rumor, i.e., a false statement based on hearsay.

DRSI is providing full telephone, fax and email support for its customers.
We are also repairing broken products both in and out of warranty. We are
open 9-5 EST, Monday to Friday, and have installed a voice mail system for
after-hours support. So, support continues and we are always looking for
new ways to communicate with our customers, such as this Internet presence.

>I guess either they are soo busy they don't consider hams important...
>or they are closing their doors...

        All customers are important, that's why we work to see that everyone
gets their DRSI products working. We also try to understand the nature of
the amateur-written shareware programs that support our products. Over the
years, support has come down to solving just a handful of common problems
that recur, mostly with new users.

        Closing our doors ?   For the umpteenth time, someone associated with
or employed by a DRSI competitor once again asks in public if we are leaving
the amateur business (and reducing the competition). No, DRSI is NOT closing up.

        For the last four years of DRSI's eight years in business, we have been
developing industrial packet radio products and making a name for ourselves in
those markets. For the last two years, we have steadily reduced our amateur
advertising and hamfest promotions, too. On October 1, I notified our dealers
that DRSI was ceasing further manufacture of amateur products. From this point
forward, DRSI will focus entirely on its industrial products for the "wireless
revolution".

        The decision to cease amateur production was made to allow DRSI as a company
to focus all of its resources, both human and financial, on the industrial products.
The simple truth is that the industrial markets place a significantly higher value
on our knowlege and expertise. This added value results in a markedly better
ROI. So, we have made a hard choice, but one which will result in better returns for
the people who give us their 8, 12 and 16-hour workdays.

>neither is a pretty picture...
>

        Tom, let me tell you what isn't "a pretty picture".

        It isn't pretty at all to see an "open letter" assault in which you ask
questions designed to leave a foregone negative impression in the readers' minds.
In the newspaper business, they call it "yellow journalism".

        It's particularly suspect when you don't identify yourself as a former part-owner
of Paccomm, and now, an employee (and likely a shareholder) in Ram Mobile Data. So, your
competitive and financial self-interests in promoting a rumor are quite clear. You
didn't take the time to pick up the phone and call us, Instead, you used the time
to write the open letter which draws negative conclusions based on a "rumor" from a
source you didn't identify. In my opinion, you think the readers of this list are
so stupid that they do not see your reasons for starting/promoting this rumor.

        Thanks for taking the time to read this reply.

Andy Demartini
aed@drsi.com

9. RE: [NETSIG:387] Re: DRSI Dropping Amateur Products

From: aed@drsi.com
Date: Thu, 1 Dec 94 21:41:41 EST
To: netsig@tapr.org
Message-ID: <Chameleon.4.00.4.941201215719.Postmaster@.drsi.com>
Rendered body type: text/plain

Greg Jones just wrote
>
>I have also heard the same rumor that DRSI has stopped all amatuer products
>and support and is only working on the commercial side...not sure if DRSI
>folded and the products got moved to another company name or not.

Neither. DRSI is operating with the same name, address, phone and fax numbers.
We no longer produce amateur products, and have focused all resources on
the industrial products.

We continue to support our amateur products, both in and out of warranty. We
provide telephone technical support and repair service.

>The TAPR office got several calls this week from DRSI product owners saying
>that someone at DRSI told them that we sold PCPA cards and associres. This
>is not the case for anyone out their reading.

True, no one at DRSI would ever say that. We retain ownership of the designs
and copyrights. Greg, we are referring callers to TAPR when they want to
add a 9600 baud modem to the DPK-2 via the disconnect header.

>
>Andy is on the NETSIG group, I believe, so maybe he can give us the true
>word.

You've heard it straight from the source. I'll also answer any questions about
the amateur products and their support.

>It would make since that more money and less support to possible in the
>commerical side of the equation.
>
>Greg
>

The "more money" is true. Our industrial products have more value-added and
hence are worth more to those customers. We get a better return-on-investment
on the industrial products. The part about "less support" is incorrect. We
are often involved in a system integration effort that absorbs a lot of time.
In a past issue of GPS World, we were cited as having provided the radio modems
for a vessel tracking system installed along the Panama Canal. That took weeks
to commission, lots of travel and conferences with the prime contractor and the
other subcontractors. In contrast, we get one support call for every 17.6 TNC's
sold. The call lasts an average of 8 minutes. The cost of support for a well-built
product can be reduced to almost zero over time. On the other hand, the industrial
products are purchased by customers whose problems are more complex and who
have allowed for additional cost to fill in where they need help. On balance,
we work a lot harder, and we earn more for our efforts.

10. Re: [NETSIG:382] DRSI Dropping Amateur Products

From: dreamer@lhaven.UUmh.Ab.Ca (Lawrence *The Dreamer* Chen)
Date: Thu, 1 Dec 1994 22:48:07 -0500
To: netsig@tapr.org
Message-ID: <9412020348.71yb@lhaven.UUmh.Ab.Ca>
Rendered body type: text/plain

Hi tmoulton (tmoulton), in <05823.15021573@RAMail> on Dec 1 you wrote:

> I heard a rumor that DRSI (Clearwater, FL) is no longer supporting their
> customers.
>
> Has anyone else heard this?
>

Yeah, I heard about this to. One of the local BBS operators was sending a
DRSI PCPA-1 card that had cratered back to DRSI for repairs....and the guy
at DRSI mentioned they were getting out of the Amateur Market.

I wonder if I should run out and grab a few DCD-3105 modules before they go. I
want to get DCD into my DPK-2 someday....and they might be interesting to take
a peak into.

I also wonder if there's any point to getting a DRSI PCPA-2 for my BBS.

--
 "Just a Crazy Engineer with an Amiga and an HP48sx"   - The Dreamer
 Email: dreamer@lhaven.uumh.ab.ca   or   "Lawrence Chen" @ 1:134/3002
 PHONE: +1 403 526 6019   FAX: +1 403 529 5102   CIS: 74200,2431
 Praxis Society K12 BBS: +1 403 529 1610 Lunatic Haven: +1 403 526 6957
 Packet: VE6LKC @ VE6PAQ.#SEAB.AB.CAN.NA - Coming Soon, Praxis Free-Net

11. Re: Subnetworking, etc...

From: wb9mjn@wsu1.n8fow.ampr.org
Date: Fri, 02 Dec 94 05:28:50 UTC
To: netsig@tapr.org
Message-ID: <33441@wsu1.n8fow.ampr.org>
Rendered body type: text/plain

Hi Carl, Ron, WA3DSP and others (?). I ve just read thru much of ur
subnetworking discussion. Ron's comments on how to run IP thru a NETROM
transport network are pretty much my opinion on the solution.

  But, Karl , from ur comments about how busted NETROM is in the west there,
re: one way routes, fadeing in nodes screwing up otherwise good routes, it
VERY MUCH seems to me like u VERY MUCH need an organisation like NEDA. Or
perhaps a node operating corp, with universal sysop access to all the nodes

who wish to have working NETROM routing. NETROM can be made to work well,
and the "Defined Neigbors"/"Locked ROUTES" approach u mention in the
TheNET documentation has been the status quo here in the midwest for
years and years. Node that don t participate in this game plan are left at
low qualities by the cooperating neighbor nodes. Until there is a somebody
who can go thruout the whole network, debugging routing problems on the
large scale, and educating the parochial areas within the region how to
cooperate with the greater network, ur routing will be bad. I used to
do allot of this here, but don t judge how well this stuff can work, by
how it works now. Allot of our NETROM network is in gross disrepair, and
the people that come along to "fix" it don t stick around long enuf to
"learn" it. Causing lots more fragmentation.

  BTW, the IP Info fields need to be down around 216 i beleive, so that
the IP frame (with addresses, info, control, etc) will fit in the 230
NETROM Info field. Exceeding the size by even one bit, will cause a second
NETROM transport level info frame transaction to be required, per IP Info
feild transaction. And since much of the ham NETROM network has TXD times
as large as the Info Field time and along with the Ack and channel acquisition
and process times, its a pretty good guess that ur 2 to 1 ratio of NETROM
transport time, to IP transport time is due to the missizing of the IP
Info Fields, for NETROM by a small amount.

73, Don wb9mjn%wb9mjn.ampr.org@wsu.n8fow.ampr.org

12. Re: [NETSIG:389] RE: DRSI Dropping Amateur Products

From: Greg Jones <gjones@tenet.edu>
Date: Thu, 1 Dec 1994 23:49:36 -0600 (CST)
To: netsig@tapr.org
Message-ID: <199412020549.XAA29704@Kay-Abernathy.tenet.edu>
Rendered body type: text/plain

Thanks for posting your message Andy. I am sure everyone appreciates
hearing the word straight from the source.

Many amateurs have purchased and enjoy your products, so we were all a little
concerned when we had heard of changes in a company that had done business
and was a part of the community for the last number of years.

I think it is great to have you on-line to help with these miscommunications.

Cheers - Greg

President -- Tucson Amateur Packet Radio Corp

TAPR Office (817) 383-0000 | Internet: gjones@tenet.edu
---

13. Re: [NETSIG:393] RE: DRSI Dropping Amateur Products

From: "Gary McDuffie, Sr." <mcduffie@hannibal.wncc.cc.ne.us>
Date: Fri, 2 Dec 1994 00:26:48 -0700 (MST)
To: netsig@tapr.org
Message-ID: <Pine.3.89.9412020043.A18978-0100000@hannibal>
Rendered body type: text/plain

On Thu, 1 Dec 1994, Greg Jones wrote:

> Thanks for posting your message Andy. I am sure everyone appreciates
> hearing the word straight from the source.
>
> Many amateurs have purchased and enjoy your products, so we were all a little
> concerned when we had heard of changes in a company that had done business
> and was a part of the community for the last number of years.
>
> I think it is great to have you on-line to help with these miscommunications.
>
> Cheers - Greg

Like Greg, I have to add my thanks, Andy. However, I wonder if you know
how empty a feeling you are leaving in the gut? I'm very glad I purchased
my second card recently, and I'm very worried about wanting/needing more
in the future. There is no other product to take its place. Packet is
very slow to progress out here in rural America, and we are probably
within a year or so of wanting to build the network up with more
equipment. I worry that it won't be there when we need it. I have no
idea what other products you build (commercially), and I wonder if there
is anything comparable to the PCPA that we could afford to buy?

We will miss DRSI in the amateur market. I only hope we can get along
without it. Greg, how about a TAPR version?

With regrets...

Gary McDuffie, Sr. - AG0N

P.S. I have to brag... my boy just passed his 13wpm tonight. He's now a
General class. Proud Pop!

14. Re: [NETSIG:389] RE: DRSI Dropping Amateur Products

From: tmoulton@ram.net
Date: Fri, 02 Dec 94 06:39:54 EST
To: netsig@tapr.org
Message-ID: <05827.15021573@RAMail>
Rendered body type: text/plain

>>I heard a rumor that DRSI (Clearwater, FL) is no longer supporting their
>>customers.
>
>   This is certainly a rumor, i.e., a false statement based on hearsay.

a rumor is something that is uncertain, I did not know if it were true or
false, that's why I called it a rumor.
>
>DRSI is providing full telephone, fax and email support for its customers.
>We are also repairing broken products both in and out of warranty. We are
>open 9-5 EST, Monday to Friday, and have installed a voice mail system for
>after-hours support. So, support continues and we are always looking for
>new ways to communicate with our customers, such as this Internet presence.

Good!

>
> On October 1, I notified our deale
>rs
>that DRSI was ceasing further manufacture of amateur products. From this po
>int
>forward, DRSI will focus entirely on its industrial products for the "wirele
>ss
>revolution".
>

Maybe you should have made a more public notice to the hams..

>   It's particularly suspect when you don't identify yourself as a former
>part-owner
>of Paccomm, and now, an employee (and likely a shareholder) in Ram Mobile Da
>ta.

I am not a "former part-owner of Paccomm", I worked there full time 5
years ago for a grand total of 1 year and then moved back to New Jersey.

As far as my connection to RAM, sadly I am just an employee, RAM does not
offer any Stock for sale. The closest thing I could do to be a stockholder is
to buy stock in Bell South, who owns 49% of RAM Mobile Data.

So to me profrssionally the existance of DRSI is of no matter, unless your
products start talking Mobitex.

This was not crafted to piss anyone off, it was an easy forum to find out the
truth, which we did! As you can see many other people had heard the same
false rumor.

Tom, W2VY

15. Re: [NETSIG:392] Re: Subnetworking, etc...

From: Klarsen <k5di@acca.nmsu.edu>
Date: Fri, 2 Dec 1994 07:56:24 -0700 (MST)
To: netsig@tapr.org
Message-ID: <Pine.SUN.3.90.941202074342.20811A-100000@kazak>
Rendered body type: text/plain

On Thu, 1 Dec 1994 wb9mjn@wsu1.n8fow.ampr.org wrote:

        Lots removed.......

>   BTW, the IP Info fields need to be down around 216 i beleive, so that
> the IP frame (with addresses, info, control, etc) will fit in the 230
> NETROM Info field. Exceeding the size by even one bit, will cause a second
> NETROM transport level info frame transaction to be required, per IP Info
> feild transaction.

        A good question Don and I don't have a full complete answer but
here is what logic tells me:

        Netrom does place address information in the data part of a ax.25
packet and this decreases the amount of data you can put in a packet. I
recall that we have about 236 out of 255 bytes left for data. So I
suggest we set the mtu to 230 so there will be a few "saftey bytes". But
now comes the interesting part.

        I think ax.25 treats ALL the ip information as if it were "pure
data". So the 40 or so ip address bytes travel as data in the ax.25
packet. So setting the mtu at 230 will work with a nos station, ie: every
packet nos makes will fit in 1 ax.25 packet. I have not looked at this
receintly Don since we got the X1j nodes up and working.

And since much of the ham NETROM network has TXD times
> as large as the Info Field time and along with the Ack and channel acquisition
> and process times, its a pretty good guess that ur 2 to 1 ratio of NETROM
> transport time, to IP transport time is due to the missizing of the IP
> Info Fields, for NETROM by a small amount.
>
> 73, Don wb9mjn%wb9mjn.ampr.org@wsu.n8fow.ampr.org
>
>
        Thanks for the thoughts Don, and if you have more info pass it along.

73, karl k5di

16. PCPA alternatives

From: Glenn Elmore <glenne@eagle.sr.hp.com>
Date: Fri, 2 Dec 1994 07:25:00 -0800 (PST)
To: netsig@tapr.org
Message-ID: <9412021525.AA23196@eagle.sr.hp.com>
Rendered body type: text/plain

Gary McDuffie, Sr. wrote:
>
> Like Greg, I have to add my thanks, Andy. However, I wonder if you know
> how empty a feeling you are leaving in the gut? I'm very glad I purchased
> my second card recently, and I'm very worried about wanting/needing more
> in the future. There is no other product to take its place. Packet is
> very slow to progress out here in rural America, and we are probably
> within a year or so of wanting to build the network up with more
> equipment. I worry that it won't be there when we need it. I have no
> idea what other products you build (commercially), and I wonder if there
> is anything comparable to the PCPA that we could afford to buy?

  I've generally been pleased with the Ottawa PI2 cards, they offer a
high speed port which is DMA along with a lower speed (apparantly up to
9600 bps) interrupt driven port that can be configured with an onboard
1200 bps modem. I've previously owned a DRSI card and greatly prefer
the PI2.

  I don't know what the most recent pricing on a PCPA was but the Ottawa
card seems very competetive with external TNCs. Unless someone really
needs standalone operation (no PC host) I can't figure out why a
conventional TNC is necessary any more. The PI card operates *much*
faster than the fastest of TNCs as well.

  Even with a dedicated host, with current pricing of 386DX40 boards,
and just a minor bit of scrounging, it seems one can build a complete
host for $200-$300, including the radio interface. We have
several such running here now.

Glenn Elmore n6gn

amateur IP: glenn@SantaRosa.ampr.org
Internet: glenne@sr.hp.com

17. Re: [NETSIG:396] Re: Subnetworking, etc...

From: crompton@nadc.nadc.navy.mil (D. Crompton)
Date: Fri, 2 Dec 94 10:24:25 -0500
To: netsig@tapr.org
Message-ID: <9412021524.AA18538@nadc.nadc.navy.mil>
Rendered body type: text/plain

>   Netrom does place address information in the data part of a ax.25
packet and this decreases the amount of data you can put in a packet. I
recall that we have about 236 out of 255 bytes left for data. So I
suggest we set the mtu to 230 so there will be a few "saftey bytes". But
now comes the interesting part.

Been awhile since I worked with netrom and IP but I remember that
MTU's are set by default for netrom ports (as shown in ifconfig)
We always had to run MSS at 196 max (think we used 194) and windows
of 2X were used, to make it travel without fragmentation - which the
netrom nodes could not handle.

There is a good discussion of this in the NOS manual at the end - paclen,
mtu, mss, etc.

Of course if all nodes were NOS then these limitations would not apply.

Doug

18. Re: Subnet networking

From: David Brooke <db@fusk.demon.co.uk>
Date: Sat, 3 Dec 94 23:25 GMT
To: netsig@tapr.org
Message-ID: <m0rE3pX-00037qC@fusk.demon.co.uk>
Rendered body type: text/plain

In article <m0rD07l-0002dKC@mtewe.kevin.mt.us>
fuseki!mtewe!vodall@hprwp.fc.hp.com writes:
>
>I've never had the opportunity to see what the best possible is with
>1200 baud packet on a clear channel. Or with 1K or bigger MTU packets?
>Does anybody have some numbers to share?

Well it's not exactly at the speed you asked for but hopefully still of
interest w.r.t MTU sizes.

Using 9k6 on a direct link between 2 stations on a quiet channel with TxD of
about 100mS and aggressive p-persist at both ends using KISS TNCs running
19k2 RS232 we got 300 bytes/sec with MTU 256 and 500 bytes/sec with MTU
1024. Window was equivalent of 2 packets and file was about 30k bytes.

MTU is a trade off between probability of getting an error in a packet and
maximising size to reduce overheads. We didn't experiment with other values
except 2048 bytes which didn't help on our fairly weak signal link.

Dave G6GZH

19. delete all

From: cokstein@hoh.mbl.edu (Charles Okstein)
Date: Sat, 3 Dec 94 22:47:54 EST
To: netsig@tapr.org
Message-ID: <9412040347.AA23534@hoh.mbl.edu>
Rendered body type: text/plain

delete all

20. [NETSIG:371] Re: Subnet networking

From: genie-postmaster@geis.com
Date: Wed, 30 Nov 94 00:22:00 UTC
To: netsig@tapr.org
Message-ID: <199412042033.AA151163183@relay2.geis.com>
Rendered body type: text/plain

Original Msg Id: Not Found
genie-postmaster response to your message

    Subject: [NETSIG:371] Re: Subnet networking
    System: QUIK-COMM
    Date: Wed 30-Nov-94 0:22

Status: 5   Message picked up by receiving system and
            delivered to all recipients with NO exceptions.

21. Sacable FSK Modem Availability?

From: "VY2DCS, SEELER@UPEI.CA" <SEELER@upei.ca>
Date: Mon, 05 Dec 1994 14:45:40 -0400 (AST)
To: netsig@tapr.org
Message-ID: <01HKADSUXVFA9D4ZZW@upei.ca>
Rendered body type: text/plain

Hi - I am interested in the FSK modem that was described in the 13th ARRL Digital Conference (1994) which can do DC to 19k2. The paper was by W.-H. Rech and G. Jost. Has anyone had the opportunity to try this modem out? Has it been used for 220, 440 MHz operations - if so how did / does it do?

I have noticed that TAPR has indicated an interest in supplying 1.2GHz digital radio systems by G-W Rech. Does this system use the scalable baud rate FSK modem? Is the modem available separately?

Any information would be greatly appreciated!

73 for now - Dave Seeler, VY2DCS
Internet: Seeler@upei.ca

22. Looking for information

From: janderson@ram.net
Date: Tue, 06 Dec 94 09:31:53 EST
To: netsig@tapr.org
Message-ID: <01808.15021591@RAMail>
Rendered body type: text/plain

I'm currently exploring the possibility of enhancing and upgrading an existing network in a large metropolitan area. One switch technology being considered is ROSE. I am looking for comments from users and operators who have worked with ROSE.

If you are a SYSOP, NODEOP or USER who has worked with ROSE switches, I would very much appreciate any comments, pro or con, about the ROSE system. It would probably be best if you send your comments directly to my email address. Reasonable discussion on this list address would also be welcome, but I don't want to start any riots.

I'm also interested in any recommendations you may have for other networking technologies. The area in question (which shall remain nameless for now) has no real network in place, just a mish-mash of (typically) un-optimized NET/ROM, TheNET, BPQ and MSYS nodes that may comprise small local networks but limited wide area capabilities. We would like to move in the direction of an organized, managed network with 1200/9600 (and perhaps faster) user ports and a high speed backbone.

Thanks in advance,

Jack Anderson
n4uls@ram.net

23. Re: [NETSIG:403] Looking for information

From: Klarsen <k5di@acca.nmsu.edu>
Date: Tue, 6 Dec 1994 12:52:49 -0700 (MST)
To: netsig@tapr.org
Message-ID: <Pine.SUN.3.91.941206123817.25539C-100000@kazak>
Rendered body type: text/plain

On Tue, 6 Dec 1994 janderson@ram.net wrote:

> I'm currently exploring the possibility of enhancing and upgrading an
> existing network in a large metropolitan area. One switch technology being
> considered is ROSE. I am looking for comments from users and operators who
> have worked with ROSE.

That lets me out.

> I'm also interested in any recommendations you may have for other networking
> technologies. The area in question (which shall remain nameless for now) has
> no real network in place, just a mish-mash of (typically) un-optimized
> NET/ROM, TheNET, BPQ and MSYS nodes that may comprise small local networks

Jack I assume YOU are the one who will put up a network that has nothing but the XYZ packet switches which will be optimized by YOU?

I think you need some advice from a bbs sysop that has been in networking for 7 years. You are right, more often than not a node is not optimzed to your desires, but rather to the Owner's desire. If your network of G8BPQ, TheNet and MSYS switches are not what YOU want, then talk to the Owners of them and in a diplomatic way suggest that things might be better if you...

The huge state of NM is now using the switches you list plus the X1J node to connect to most of the state. When enuf guys get the money for a radio, tnc, antenna and site they put up another node that connects them.

> but limited wide area capabilities. We would like to move in the direction
> of an organized, managed network with 1200/9600 (and perhaps faster) user
> ports and a high speed backbone.
>
For your city work I would use an X1J node on a 9600 baud TAPR modem with the bit-wise regenerator chip. I would put the radio on a repeater pair in the 440-450 MHz frequency. Then put up another X1J node on the 145.xx frequency at 9600 and another at 1200 baud. Connect them all together and the city hams can decide how fast they want to go.

> Thanks in advance,
>
> Jack Anderson
> n4uls@ram.net
>
73, karl k5di

24. (no subject)

From: stewart@kepler.IFA.Hawaii.Edu (Christopher Stewart)
Date: Tue, 6 Dec 94 15:31:49 HST
To: netsig@tapr.org
Message-ID: <9412070131.AA07734@kepler.ifa.hawaii.edu>
Rendered body type: text/plain

This is in repley to the person who was asking for response from Rose sysops. I lost the original request, sorry.

Having been running Rose here in Hawaii for some years, I find so far since we started it has always proven to be far superior to Netrom or thenet or x1j for networking. Let me add here that I have run all four and am constantly watching out for what will work best for us. Under the concepts we use, Rose fits in the best. Your Needs May Differ.

Here are our concepts of what we want from our network here.
  Total control over how and where the packets are sent, link to link.
  Per packet overhead reduced to the minimum, forget this 20-40 bytes per packet overhead.
  No broadcasting.
  Allow any protocol to go thru the network without having to create seperate networks that reduce overall reliability, which allows us to create useful larger coverage links that can be used for transparent-to-the-user rerouting around link failures during times of emergencies.
  Allow us to put up immediate drop points that allow users to initiate outbound connections but blocks inbound requests. This is highly useful for areas under emergency commms that want to pass traffic outward and stop inquiries coming in which can bring the comms to its knees with redundant requests. One assumes that outward traffic is higher priority than inbound.
  Help files at each switch to bring a new user up to date on everything or at least where to go and how to get things on packet. A user connects directly to a switch and within one minute they get the help file if they do nothing. Remember when you were a new user? Usually they can monitor what is going on frequency, see that the switch callsign is most often used, will attempt a connection to it. Once connected, by the time they figure out how to disconnect or if they hit their return key, the help file is sent to them. Saves time on answering repeated new user questions.
  Allow us to make link changes in sites, callsigns, frequencies, without having to update all the users and PBBS Sysops, because it is transparent to them. Saves us huge amount of time in this area alone when we are trying to make these changes. It used to be a nightmare. Imagine trying to tell 30-100 PBBS users that their PBBS has moved. Now that is avoided by assigning a address to the PBBS itself across the network concerned. In 1992-1994 we had to move our PBBS 7 times. Each time we told no one, including other PBBS's that forward. They could not tell that it had moved until we said so.
  Does not care if the user is an expert or VIC-20 user. They can access every thing equally.
  Allow connection to any other kind of network or end PBBS without hassle. Even, Yuck! a digipeater (The 80's are over, right?).

Allows promotion of distributed end user services to be spread out across the network to maximize transport capability of information everywhere. Keeps the concept of network building has its needs (Cold Cash), and end use services with different support needs (Colder Cash).
Allows us to get better network coordination with other network coordinators. I would say this is the best of all things because it makes for better packet for everyone.
I could probably say more but will stop here and say, try it, you might be surprised at what it could do for you, and we dont make use of all the possibilities either.
We still have a x1j up, but we use it only for its conferencing capability. If something new comes out, we try it out. Nothing we have tried so has proven itself to be as easy as Rose, for our situation. Your Needs May Differ.
We are hoping the dxcluster group here will get word soon from their counter parts elswhere that using the Rose networks actually speeds up their stuff for their users. They are on the other end of our link and so do not see how well it works from our end when we make a connction.
Lastly, try it out for yourself. I trust no numbers stated and concepts. I set up some tncs with different protocols. Connect a user at each end and dump 10k-100k files thru it. Then I divide the file size by how long it took to get there. This gives me a real world numbers on how well it works based on our setup. Perhaps this is not considered to be proper thruput testing. But it seems to me the best reality check I can do with what I have.
The bottom line, I cannot praise W2VY enough for all his work. Thank you.

Oh yes, a disclaimer. These are my opinions, and my impressions of how it all works. I could be stating the concepts or the workings of Rose incorrectly, and advise that you seek other Rose network sysop opinions too.
Chris/AH6GG

25. Re: [NETSIG:403] Looking for information

From: WCHAST@delphi.com
Date: Wed, 07 Dec 1994 00:19:13 -0500 (EST)
To: netsig@tapr.org
Message-ID: <01HKCC5B43TM93AKFS@delphi.com>
Rendered body type: text/plain

We are running a pretty large ROSE network here in the Tampa Bay area.

We have had some problems with getting timers set properly as we upped the speed of the network, but we have found that it was just a question of setting these parameters properly for the higher speeds, and off it goes quite well.

As to ROSE it's self, the way you set up and maintain a ROSE network does DEMAND a cooperative relationship between network switchops, but this relationship once established means you are going to have a much more homogenous network, and there will be much better planning to it's growth.

The PID transparencey of ROSE means that it can carry the other networking protocols across the ROSE network and allow NetRom, IP ect. to appear as though they were talking device to device...

The addressing scheme means that users can issue a single command connect and will once the connection is established find themselves connected to the target call on the far side of the link, no need to pick their way through the network, nor need to have maps of the network, all they need are exit point addresses, and coverage...

Chuck Hast
No Dumb Operating System here, only OS/2. Soon to add LINUX.
Delphi: wchast@delphi.com
AX25 BBS: kp4djt@kp4djt.tpa.fl.usa.noam
ampr.org: kp4djt.ampr.org
AX.121: 3100813077
---

26. Re: [NETSIG:345] Re: info/question on duplexors.

From: bob@klaatu.kd7nm.ampr.org (Bob Donnell - KD7NM)
Date: Tue, 06 Dec 94 01:47:50 PST
To: netsig@tapr.org
Message-ID: <15@klaatu.kd7nm.ampr.org>
Rendered body type: text/plain

Steve Diggs:

Here in the Seattle area we have 5 packet repeaters currently. One is on 220 and runs at 1200 baud. One is on 2 meters and is 9600 baud, and the

```
rest are on 440 at 9600 baud.  All systems are using a single antenna,
with standard cavity duplexers.  The 440 systems originally started off
using the mobile duplexers that were part of the IMTS radios that were
converted into the repeaters, but there was a lot of desense - 10 dB or more.
The other systems were built up with repeater-grade duplexers from day one.

We have used single-antenna systems because in our observations of split-
antenna repeaters (even at the same site) that the hot spots for TX and
RX are different - and more so than with single-antenna repeaters.  So we
choose (or our landlord does, in some cases) what seems to work best.

Our two-meter repeater is a GE MASTR II mobile radio - 60 watts, turned
down to about 30 watts.  Ours is a wide-band PLL-based exciter.  With
some of the mods developed by the construction team, the repeater comes
on the air within 10 mS of the modem's DCD signal coming true.  That
repeater has been on the air for 2 years now, with the only problem being
that the receiver shifts off frequency in very cold weather (like the
last few days here) unless we fire enough packets at it to warm it up.
Unfortunatly we missed our chance this fall to get the properly temp.
compensated crystals installed.  :(

Currently the 3 440 repeaters are tied together via data links provided
by US West Cellular and their ham club, and the repeaters (coincidently)
are located at cell sites with antennas on the cell towers.  As more
users get on the repeaters, along with their previous lan connections,
we are supplementing the hard-wire connections with gateways at users'
homes to tie all the repeaters together.  The concept really does work.

Hope this gives you some insights.

73, Bob KD7NM
--------------------------------------------------------------------------
|   Bob Donnell, KD7NM       bob@kd7nm.ampr.org    rdonnell@eskimo.com    |
|   Western Washington Amateur IP Address Coordinator   (206) 775-3651    |
--------------------------------------------------------------------------
```

27. Re: Looking for information.

```
From: wb9mjn@wsu1.n8fow.ampr.org
Date: Thu, 08 Dec 94 02:44:56 UTC
To: netsig@tapr.org
Message-ID: <34079@wsu1.n8fow.ampr.org>
Rendered body type: text/plain
```

```
Hi N4ULS and others. You can pretty much do the wide area stuff with either
ROSE or NETROM equivalently. I see no real advantage for ROSE, over a properly
run NETROM network. I personally do not like the ROSE user interface. But that
may just because i was exposed to NETROM first.

 NETROM networks typically do not achieve wide area success. This has nothing
to do with the features in Netrom. Everything needed to do a successful job is
there. The success is usually blocked by personal ego's and lack of cooperation
or capability to educate.

 ROSE has a phsycological advantage as i see it. Being technically more meager,
and usually understood by one "Guru" in an area, the cooperation is automatic.
Either the "Guru" is allowed to do his thing, or u can t even get between
neighbor nodes. So, the owners tend to let the "Guru" do all the operating, and
the cooperation between nodes is then automatic. Also, since there are not
"Tom, Dick and Bozo" neighboring ROSE system owners, there is no politics ex-
erted on the "Guru" to make things work to Bozo's system, when Bozo hasn t
got the faintest idea what s going on, and wont let anybody fix it for them,
on an ongoing basis.

 Now, you may wonder why i m bringing this stuff up. My experience is that
u can do the wide area job technically, easily, with ROSE, IP, NETROM, FLEXNET,
and probably a few other Level 3/4 systems. It don t matter what u pick, only
thing that matters is if the hams in the comunity of the area to be covered will
let u get on with the endevour.  These things are all pretty much equivalent
in what u can achieve with them. The problems in Ham Radio Packet Networking
are cooperation, community, system design and site procurement.

  I personally like IP because of its integration of applications. This gives
it a future. Oh, yea, the IP addressing scheme is the most versatile, too.
IP Routing is kinda up in the air at the moment, but in the long term that
will shake out. Discussion here have been where do we automate? Below the
horizon or above, or both and if both, together or split? For the time being
split, and fixed can work, with cooperation. And locally the cooperation
is not happening at the moment.
```

73, Don wb9mjn%wb9mjn.ampr.org@hamgate.cc.wayne.edu

28. Re: [NETSIG:408] Re: Looking for information.

From: tmoulton@ram.net
Date: Thu, 08 Dec 94 06:30:22 EST
To: netsig@tapr.org
Message-ID: <05877.15021573@RAMail>
Rendered body type: text/plain

>Subject: [NETSIG:408] Re: Looking for information.
>
>
> Hi N4ULS and others. You can pretty much do the wide area stuff with either
>ROSE or NETROM equivalently. I see no real advantage for ROSE, over a proper
>ly
>run NETROM network. I personally do not like the ROSE user interface. But th
>at
>may just because i was exposed to NETROM first.
>

Due to many requests I am working on a NODE style interface for ROSE, it
has been delayed a bit due to a greater demand for UI support for IP,
which I am also working on.

> NETROM networks typically do not achieve wide area success. This has nothin
>g
>to do with the features in Netrom. Everything needed to do a successful job
>is
>there. The success is usually blocked by personal ego's and lack of cooperat
>ion
>or capability to educate.

I have been told by some NetRom network managers that due to the way nodes
are propagated through the network there is a limit on the size a single
network can grow, since the node names fall off the edge. Is this true?

>
>73, Don wb9mjn%wb9mjn.ampr.org@hamgate.cc.wayne.edu

29. Re: [NETSIG:408] Re: Looking for informa

From: WCHAST@delphi.com
Date: Thu, 08 Dec 1994 23:31:11 -0500 (EST)
To: netsig@tapr.org
Message-ID: <01HKF30PA6BC90ROPC@delphi.com>
Rendered body type: text/plain

WB9MJN said:
>You can pretty much do the wide area stuff with either ROSE or NETROM
>equivalently.

I think that if you will observe some of the large TheNet/NetRom networks
such as the one in New England, you will find that though you may be able
to cover the same distance, you must do a good part of that manually.

I believe that NEDA only allows nodes to propagate 3 deep.

>From my vantage point here in Florida I can connect to other users on
the ROSE network that we are interconnected to, some of these users are
as much as 40 or more switches distant from me, and I only issue ONE
connect request.

>I see no real advantage for ROSE, over a properly run NETROM network.

I suppose you do not since you probably have not dealt with a large ROSE
network. But from where I set here in Tampa Florida I can use a large
NetRom network, up in Minnesota, and a large ROSE network, TX, OK, AR,
LA, FL and East NM. I find the difference is like night and day.

I can not find any real INFO on the MN network, I am told the get a
nodes list... I get something that looks like a crypto sheet, and give
up after trying to decode it.

But, I can connect to say INFO at say 214411 and I get back a pretty good
descripton of what I can access in the 214 area over around Dallas. 817411
gives me simular data on that area. We also use 555 for wide area INFO,
and it has become standard over most of the ROSE type networks. Makes
network trolling very easy.

NetRom looks like a series of old step by step exchanges with manual

routing between them, ROSE looks more like a nice clean network that
lets me get to where I want to.

Another advantage being that ROSE is PID transparent, it can transport
IP, NetRom or any other protocol (inside AX.25 frames) transparently.

As a counter example, in order to transport IP over NetRom you first
must fool the NetRom into thinking you are sending it something with
either a F0 PID or a NetRom PID. Some people have done this by writing
drivers (NOS as a example) in order to send IP over the network, that
is a little like having to go out and learn some strange language in
order to user your telephone, because the TELEPHONE can not carry
English or Spanish or whatever language you are going to use.

The NETWORK should be transparent, when it is not it limits what others
can do. So I do not think that NetRom has any advantage here.

>I personally do not like the ROSE user interface. But that may just
 because i was exposed to NETROM first.

To each his own, I personally see no need to have to connect to SOMETHING
before I connect to my target, I am trying to connect THROUGH a network TO
my target. But again, to each his own.

>NETROM networks typically do not achieve wide area success... [cut]..
 I think it has much to do with the design of NetRom, it was designed for
 small networks, and a large network totally taxes it's operation unless
 you limit the propagation of nodes data, and thereby fall back to the
 manual routing...

> ROSE has a phsycological advantage as i see it. Being technically more
  meager...

This one is interesting, I am not sure what you mean by "meager" if you
mean that the level 3 overhead is lower (3-5 bytes/level 3 frame as
compared to 20 bytes/level 3 frame for NetRom) then indeed it is much
more meager, but with rf paths being mostly "thin" and slow why load them
up with all that overhead, we need the bandwidth for other applications
that are more fun to play with than NetRom overhead.

As far as tools to work with, there are tools being developed right now,
There is a Network Manager program written by NX2P which will allow the
network sysops to build and add to the network as it grows. There is also
a tool that allows network sysops to go inside a switch and change parameters
on the switch, it does it neatly and without having to deal with cryptic
rows of numbers ect.

There are others that are presently being developed. There is even a PC
based version of ROSE that has been developed by a fellow switch op here
in Florida. So meager in terms of tools I think is not quite the description.

>Either the "Guru" is allowed to do his thing, or u can t even get between
 neighbor nodes.

Here in Florida we are trying to educate others help sysop the switches,
finally we are beginning to get some takes, guru NOT, we would like to
have a lot of sysops to help run the network makes it a lot easier to
go off on a trip or not worry if something happens at the switch site.

Most users are not interested in sysoping, all they are interested in
is a operational network.

ROSE does make the sysops work together and that is very important, we
have to PLAN the network, and a planned network is a much better plan
than a hodgepodge "me too" network.

>The problems in Ham Radio Packet Networking are cooperation, community,
 system design and site procurement.

This is a very true statement, and we have found the same problems here
in Florida as in other areas. But I have found that by being forced to
work as a group and not as independent "node ops" we are able to achieve
more lasting and reliable network parts.

> I personally like IP because of its integration of applications.

I too like IP, but I believe that IP was designed to link machines and
the machine applications, not to be the whole network. Look at the dis-
cussion going on on the TCP list right now about that very idea.

ROSE addressing is based on X.121 addressing and that addressing scheme
was designed to network a whole planet, and allow such systems as IP
to flow through it and do what they do best.

ROSE meets many of the problems that have been voiced on the TCP list
as to handling the AX.25 links. And the author Tom Moulton is working
to make ROSE operate even more transparently right now.

I personally believe that a network built using both is a very effective
way to deal with the problems that both systems have, and the combination
of the two gives a very powerful set of communications tools that we can
use to make our RF networks operate most effectively.

I have tried NetRom and found it wanting, it does work and works well for
small networks, but when you want a large network you need a addressing
system that can deal with a network of any size, you need a routing system
that too can handle whatever size of network you design. And you need a
network protocol that has low overhead and at the same time is robust and
will carry your data across the network with a minimal impact on bandwidth.

Why burden your already low bandwidth RF paths with more and more overhead
when you do not need it??

I am sorry, if I sound biased but I suppose I am, I have tried NetRom and
even tried to operate a network based on it many years ago, and due to
user disgruntlment changed back to ROSE. I found it wanting, and today
still find it to be so.

Chuck Hast
No Dumb Operating System here, only OS/2. Soon to add LINUX.
Delphi: wchast@delphi.com
AX25 BBS: kp4djt@kp4djt.tpa.fl.usa.noam
ampr.org: kp4djt.ampr.org
AX.121:   3100813077
---

30. Re: Looking for information.

From: wb9mjn@wsu1.n8fow.ampr.org
Date: Fri, 09 Dec 94 04:20:37 UTC
To: netsig@tapr.org
Message-ID: <34221@wsu1.n8fow.ampr.org>
Rendered body type: text/plain

Hi Tom, and others. Yes, because NETROM has an autorouter which functions
in a determinstic manner, the range of a NETROM network is less. There are
ways to operate around this. If ur users will cooperate and not put up per-
sonal Nodes, this lessens the memory requirements, increasing range. Of course
with ROSE there are few, if any personal nodes, so this point is mute with
ROSE, but is this because just because NETROM is much more available, and has
an autorouter while ROSE is much less available, and does not have an autorouter.

  Larger memory in the NETROM nodes will also aleviate the practical effects
of this problem, too. NETROM has the "slime trail" feature as well. And before
there was a PC version of NETROM this feature was generally enabled, and worked
well. But with the uncooperative technigue of using the "slime trail" as a way
to hide on a backbone one is not coordinated on, "slime trail" gets turned off.
Again, not a technical fault, but a cooperation problem in the ham packet
community. The flaw here is that autorouter's determine routing to specific
nodes, and thus memory required for a route to all those specific nodes out
there gets out of hand fast. NETROM's programmer's did figure this out, how-
ever, and put in the "slime trail", but Ham's corupted its usage, and made
it unusable. This is really no different an effect, than a ROSE operator who
does not do the routing tasks that are required, for whatever reason, since
ROSE does not have an autorouter. The cause's are different, but the effects
are the same.

  The impression i get from the pro-ROSE comments I find somewhat nieve of
the operating tweaks NETROM can be put thru. The reason everybody just doesn t
jump over to ROSE, is because the people that are using NETROM successfully
, do not see any technical advantage to ROSE, and the ROSE commentors just
don t understand how NETROM is used successfully. Where ROSE has succeeded
is pretty much a map of the areas where understanding of how to make NETROM work
was non-existant. Not to say that all the places using NETROM know what they
are doing with NETROM, however.

 ROSE is nice, its just not a socalled "killer" solution. TCPIP, less its
router developement hole, is just so much moreso a "killer" solution over

both NETROM and ROSE. And the versatility of IP addressing fills the router
developement hole, for the meantime.

73, Don. wb9mjn%wb9mjn.ampr.org@hamgate.cc.wayne.edu

31. Re: [NETSIG:411] Re: Looking for information.

From: tmoulton@ram.net
Date: Fri, 09 Dec 94 06:42:08 EST
To: netsig@tapr.org
Message-ID: <05887.15021573@RAMail>
Rendered body type: text/plain

Don,

The autorouter in Netrom is nice for small networks, but for a Network that
covers hundreds of miles the level 4 timers will need to be set quite long
to insure that the entry node does not retry transmissions too often.

This has a significant impact on performance.

ROSE has no level 4, besides level 4 and above belongs in the End User's
Terminal.

Larger memory may reduce the need to drop nodes off the list, but it would
not have any impact on the required level 4 timers.

I would like to help people understand the technical advantages of ROSE.
It was designed to be a National network, not one to connect NOCAL and SOCAL.

TCP/IP is *NOT* a stand alone "killer" solution. Phil's has stated that it
needs a fully connected ax.25 network layer. (i can get the exact quote)

ROSE is currently working on fixing the routing hole.

73, tom w2vy

32. Re: [NETSIG:412] Re: Looking for information.

From: Barry McLarnon VE3JF <bm@hydra.carleton.ca>
Date: Fri, 9 Dec 1994 10:04:32 -0500 (EST)
To: netsig@tapr.org
Message-ID: <199412091504.KAA06994@hydra.carleton.ca>
Rendered body type: text/plain

> I would like to help people understand the technical advantages of ROSE.
> It was designed to be a National network, not one to connect NOCAL and SOCAL.
>
> TCP/IP is *NOT* a stand alone "killer" solution. Phil's has stated that it
> needs a fully connected ax.25 network layer. (i can get the exact quote)

The gist of it was that there is a need for a network sublayer between the
ax.25 link layer and IP. This sublayer would use a dynamic routing protocol
to pull together the rf fragments and provide the illusion of fully connected
subnetworks to the IP layer.

> ROSE is currently working on fixing the routing hole.

I'm not convinced that an adaptation of existing routing protcols at the
IP layer can't do the job. We've had pretty good success with RIP on our
rf network here. We have our datagram-based regional subnet spread across
about a dozen different frequencies, and yet IP routing still works.
Interposing another networking sublayer under IP would be superfluous in
this case.

OTOH, Phil's solution might be cleaner (more universal), as long as it
doesn't add a bunch more overhead, and it doesn't take another 10 years
to arrive.

So tell us more about how (and when) ROSE will fix 'the routing hole'...

Let's face it: the *real* problem in amateur packet networking is that
amateurs continue to try to use underpowered hardware (slow modems,
radios with lousy turnaround time, TNC-based routers, etc), and poorly
engineered rf network nodes (hidden transmitters, intermod, etc). No
amount of software cleverness can work around these fundamental problems.
Unfortunately, the knowledge and expertise (and, yes, the money) needed
to do it right are scarce commodities these days.

> 73, tom w2vy

Barry

--
  Barry McLarnon VE3JF/VA3TCP | Internet: bm@hydra.carleton.ca
  Ottawa Amateur Radio Club | AMPRnet: barry@va3tcp.ampr.org
  Packet Working Group | FreeNet: aa187@freenet.carleton.ca

33. Re: [NETSIG:413] Re: Looking for information.

From: tmoulton@ram.net
Date: Fri, 09 Dec 94 11:33:26 EST
To: netsig@tapr.org
Message-ID: <05896.15021573@RAMail>
Rendered body type: text/plain

>The gist of it was that there is a need for a network sublayer between the
>ax.25 link layer and IP. This sublayer would use a dynamic routing protocol
>to pull together the rf fragments and provide the illusion of fully connecte
>d
>subnetworks to the IP layer.
>

Can the existing routing work correctly if all the stations are on the same
channel but can only hear each other through a digipeater?

>> ROSE is currently working on fixing the routing hole.
>
>So tell us more about how (and when) ROSE will fix 'the routing hole'...

The how is what we are going to discuss, I want to put support for UI frames
in ROSE. Plain IP via UI through ROSE will be ready for testing by New Years.

The additional features I want to add later are Group Broadcasting (one UI
in and one UI out many different User Ports).

Let's see what NOS needs from the network and if it can be done efficently
within ROSE or not.

>
>Let's face it: the *real* problem in amateur packet networking is that
>amateurs continue to try to use underpowered hardware (slow modems,
>radios with lousy turnaround time, TNC-based routers, etc), and poorly
>engineered rf network nodes (hidden transmitters, intermod, etc). No
>amount of software cleverness can work around these fundamental problems.
>Unfortunately, the knowledge and expertise (and, yes, the money) needed
>to do it right are scarce commodities these days.

AGREED! But the problem we are discussing is purely a one of getting the
        network to provide the features the user application needs to
        operate with the least headaches and best performance.

>Barry
>
73, Tom W2VY

34. Re: [NETSIG:409] Re: Looking for information.

From: Jack Taylor <n7oo@huachuca-emh8.army.mil>
Date: Fri, 9 Dec 94 10:44:54 MST
To: netsig@tapr.org
Message-ID: <m0rG9ah-0000S5C@dptspd.sat.datapoint.com>
Rendered body type: text/plain

I'm unaware of any limit associated with the size of a netrom network.
There is a limit to the node table length in any particular netrom node
though. Originally this limit was 400 nodes. Practically speaking, a
table with 400 nodes would cause considerable overhead during node
broadcast cycles as well as considerable channel congestion when users
exercised the "N" command.

At one time, I've "netromed" my way through every node here in the SW
to Canada, the midwest, and via the OTTSAT link into NY. Via HF gateways,
I've explored much of the east coast, Norway and via the LONNY ckt into
England. Once through a combination of HF and the TCP link between
VE3UOW - Switzerland, explored the FlexNet system in France and Germany.

My general impression thorugh this experience is that it's not so much
a function of the protocol (and how to use it) as it is to have QRM-free
radio links with adequate signal to noise ratios. To that end, I found
the NEDA and FlexNet systems to be the easiest "to move around in".

73 de Jack

35. Re: [NETSIG:415] Re: Looking for information.

From: tmoulton@ram.net
Date: Fri, 09 Dec 94 13:15:49 EST
To: netsig@tapr.org
Message-ID: <05897.15021573@RAMail>
Rendered body type: text/plain

>
>I'm unaware of any limit associated with the size of a netrom network.
>There is a limit to the node table length in any particular netrom node

I guess I consider the limit in size to be the limit of a single network level connect. If you hop around through a dozen 5 node hops you are really hopping from one subnet to another.

In ROSE you can always go from edge to edge, be it 5 hops or 1000 hops.

Yes 1000 hops is extreem, but given a properly configured system, with good RF and point to point links or no hidden transmitters it IS fully possible to have a Coast to Coast connect via ROSE in a single Network level command.

Hank - I have not forgotten about the "Golden Packet"

36. Re: [NETSIG:415] Re: Looking for information.

From: mmunster@qualcomm.com (Marvin Munster x5388)
Date: Fri, 9 Dec 1994 10:41:52 -0800
To: netsig@tapr.org
Message-ID: <ab0e54dd070210048223@[129.46.12.181]>
Rendered body type: text/plain

>My general impression thorugh this experience is that it's not so much
>a function of the protocol (and how to use it) as it is to have QRM-free
>radio links with adequate signal to noise ratios. To that end, I found
>the NEDA and FlexNet systems to be the easiest "to move around in".
>
>73 de Jack

I also am trying to keep up with various systems in the development of a network. Now, what is FlexNet? I have read the NEDA manual, and found it very informative. I didn't see a mention in there of FlexNet, however, I may have missed it.

Marvin - WB6PKK
(mmunster@qualcomm.com)

37. Protocol Analysis (was Re: Looking for information.

From: Tim Baggett <tim@nmsu.edu>
Date: Fri, 9 Dec 1994 11:48:22 -0700 (MST)
To: netsig@tapr.org
Message-ID: <Pine.3.87.9412091122.D18197-0100000@wilma>
Rendered body type: text/plain

On Fri, 9 Dec 1994, Jack Taylor wrote:

> At one time, I've "netromed" my way through every node here in the SW
> to Canada, the midwest, and via the OTTSAT link into NY. Via HF gateways,
> I've explored much of the east coast, Norway and via the LONNY ckt into
> England. Once through a combination of HF and the TCP link between
> VE3UOW - Switzerland, explored the FlexNet system in France and Germany.

What kind of response time did you have, and could you utilize services at the other end of your connections?

Traffic on the amateur packet networks is increasing every day. Not only must we still work to develope the physical layer to increase the bit rates and decrease hidden transmitters (thereby increasing efficiency and lowering response times) but we must also continue to develope new protocols.

As I've mentioned before, protocol headers are IMHO bulky. Also, the only protocols I know of that support enough routing to develope any kind of futuristic connected packet network more than a few hundred miles away are TCP/IP and ROSE. Netrom routing will not cut it, and IP routing over Netrom may solve the problem, but then the protocol headers start being redundant. IP over Netrom, may work, but it's efficency stinks, especially at our low datarates (I consider 9600 very low speed).

Just some of my thoughts. I am playing with some amateur protocol
analysis with simulations in my spare time, but I have just to many other
things to do. Some day I want to see how ROSE performs (at first I
thought it was silly, but after reading the ROSE protocol specs, it
actually seems very well thought out)

73
Tim, AA5DF

Only 7 more days and 3 pounds of coffee to go before Graduation.... 8-)

New Mexico State University Telemetry Center
Las Cruces, NM

38. Re: [NETSIG:418] Protocol Analysis (was Re: Looking for information.

From: "William L. Barnes" <wlbarn@planetx.bloomu.edu>
Date: Fri, 9 Dec 1994 15:34:23 -0500 (EST)
To: netsig@tapr.org
Message-ID: <Pine.SOL.3.91.941209153336.26204A-100000@planetx>
Rendered body type: text/plain

On Fri, 9 Dec 1994, Tim Baggett wrote:

> Tim, AA5DF
> Only 7 more days and 3 pounds of coffee to go before Graduation.... 8-)

Well congrats! I have 7 more days left, then 2 semesters before
Graduation...

39. Re: [NETSIG:416] Re: Looking for information.

From: Jack Taylor <n7oo@huachuca-emh8.army.mil>
Date: Fri, 9 Dec 94 16:14:28 MST
To: netsig@tapr.org
Message-ID: <m0rGEe9-0000UPC@dptspd.sat.datapoint.com>
Rendered body type: text/plain

While it would be ideal to make direct connects to a end destination 1000
hops away, I've found that each node has propagation delay. there seems
to be a practical limit due to this (as well as circuit congestion) which
would limit the size of ANY network, regardless of protocol. Does anyone
have information on this topic?

73 de Jack

40. Re: [NETSIG:420] Re: Looking for information.

From: tmoulton@ram.net
Date: Fri, 09 Dec 94 21:45:19 EST
To: netsig@tapr.org
Message-ID: <05903.15021573@RAMail>
Rendered body type: text/plain

>While it would be ideal to make direct connects to a end destination 1000
>hops away, I've found that each node has propagation delay. there seems
>to be a practical limit due to this (as well as circuit congestion) which
>would limit the size of ANY network, regardless of protocol. Does anyone
>have information on this topic?
>

When I picked 1000 I was thinking of a network with 1000 switches.

The point you raise is a vaild one, but the limitations you are looking at
are modem speed and processor related, not Protocol.

The technical limitations of a protocol should not limit the size and
throughput of the hardware you implement it on.

An ideal cost to coast path could use from 100 (30 miles apart) to 300
switches. A 256 byte ROSE packet at 56kb takes 0.04 sec to transmit if you
had full duplex or no contention backbones. (0.04 * 100 = 4 sec)

The real network would have txdelay's other traffic, but a delay of 60 sec is
a reasonable goal.

Many paths through the US will always have 1200 baud hops. This would cause
the delays to go up drastically, say 5-10 mins.

The point to be made for ROSE is that the routing table can support an
unlimited number of switches in the network. Which means no matter how large

the network is you can reach any switch in the network with a single network connect command.

tom, w2vy

41. [NETSIG:404] Re: Looking for information

From: genie-postmaster@geis.com
Date: Thu, 8 Dec 94 05:19:00 UTC
To: netsig@tapr.org
Message-ID: <199412100938.AA078462293@relay2.geis.com>
Rendered body type: text/plain

Original Msg Id: Not Found
genie-postmaster response to your message

    Subject: [NETSIG:404] Re: Looking for information
    System: QUIK-COMM
    Date: Thu 8-Dec-94 5:19

Status: 5   Message picked up by receiving system and
            delivered to all recipients with NO exceptions.

42. Re: [NETSIG:421] Re: Looking for inform

From: WCHAST@delphi.com
Date: Sat, 10 Dec 1994 08:54:25 -0500 (EST)
To: netsig@tapr.org
Message-ID: <01HKH103HRIA9215RC@delphi.com>
Rendered body type: text/plain

RE: propagation delays, this is where we need to start putting some of our backing behind AMSAT and satellites that can reduce these multi-mega switch hops down to say at most 5-7 switch stacks. (at two switches per stack that would be from 10-14 real switches in the path)

By proper usage of satellites we could have a very fast and responsive network, but I think that we are going to have to put our $$ into this need.

I would say that if we could get each "dedicated" packet person to put out a few dollars, we would have the money to build a box to either add to some bird that is going to be flown, or combine with other AMSAT projects to give us that needed transponder to carry the network traffic.

It would require coordination and patience (above all the last) but it could be done, and we would have a ALL RADIO LINK between major switch sites. The power of X.121 routing would really shine then, given that it would be much easier to bring non-US switch sites on line.

We need to really think about this. CCITT already has a protocol that as I understand it was designed for satellite links, it is called X.75, and is almost a twin brother to X.25. I am sure that Tom would be able to take into account the ideosyncrasies of a satellite link. The present timers in the AX.25 code will do so well I am sure...

What do you all think??

Chuck Hast
No Dumb Operating System here, only OS/2. Soon to add LINUX.
Delphi: wchast@delphi.com
AX25 BBS: kp4djt@kp4djt.tpa.fl.usa.noam
ampr.org: kp4djt.ampr.org
AX.121:   3100813077
---

43. Re: [NETSIG:423] Re: Looking for inform

From: Fred Peerenboom <af780@DAYTON.WRIGHT.EDU>
Date: Sat, 10 Dec 1994 09:17:23 -0500
To: netsig@tapr.org
Message-ID: <9412101417.AA03341@dayton.wright.edu>
Rendered body type: text/plain

Hey hey hey, I like the Idea of including a sat-link into the networking scheme for cross country hops. That and 19k2 baud will really make the thing shine.
It seems strange the way this thread has developed from one looking for some information to the idea of using a sat-link for networking. That is the way of the future though. The ideal thought? A geostationary set of links. Oh ya, I know that us hams can really afford that. But considering the actual

bandwith that we would use, compared to some of the newer TV formats, well, you get the picture.

Fred ke8tq@n8acv.#day.oh.usa.noam af780@dayton.wright.edu

44. Re: Looking for information

From: wb9mjn@wsu1.n8fow.ampr.org
Date: Sat, 10 Dec 94 15:00:55 UTC
To: netsig@tapr.org
Message-ID: <34403@wsu1.n8fow.ampr.org>
Rendered body type: text/plain

Hi, everybody (!). On the hop delay problem, the ONLY way to make the transport hop delay is to run full duplex. That way, there s no TXD delay at all, only inter-frame seperation bits as the transmitter cranks out frame after frame continuously, during the entire qso. That is yet another advantage of the CELLNET system, amoung other full duplex systems. Additionally there is no channel access time.

With a CELLNET, the only delays would be process delay, which would be equal to the time of each packet, at best. With a P10, at 56 kb that s nearly the case. It pretty much cranks the packet out another port, as soon as its received in one port. But, it takes time for the packet to occur on the input channel, and that represents a delay.

We could do something about that delay. By having the repeaters along the path just regenerate the packet. But this is very expensive. Instead of a 20 dB over 10e-3 BER, we would need 60 dB. This represents a considerable expense far in excess of the cost of a P10 switch. And the versatility of the network would be greatly reduced as well as the capacity. Since most ham links, as is my experience, are under 5 dB margin over 10e-3 BER, I think that we are not even close to being able to afford, and achieve network wide implimentation of 60 dB margin links.

The comment was made that we could use satellite bridges. A satellite hop takes 3 seconds, plus the time of the packet, plus the time to schedule the packet (assuming the use of a scheduling channel access scheme). Lets assume for the sake of discusion, that the time of the packet can be made small, and also the time of scheduling. So, the best we can do is a 3 second propagation time via a geostationary satellite link. In comparison to a a 56 Kb/s terrestrial network, with P10 s, full duplex, and no access time (ala CELLNET), there will be some number of hops where the satellite link will become advantageous. If the terrestrial packet time is 50 msec, and on average it is que d up behind 2 other packets, the time per hop is 150 msec. Yes, we much consider traffic, hi. The satellite link wont show an advantage until the terrestrial path between the two sites is more than 18 hops. That s a physical path length of 600 miles, with 30 mile hops.

A faster terrestrial network would make the break even point between satellite and terrestrial even more hops, as the packet time would be less. And, faster terrestrial network hops are certainly possible, since the RF path loss is not unsurmountable. But, the data rate increase would then make the process time thru present hardware significant. To really do this right, it all needs to be spreadsheeted, withthe specifications of both systems.

So, in conclusion we can see that Satellite links are not an end-all solution. They have their place, but without a robust terrestrial network they are of limited usefulness, if the goal is minimul packet propagation time, and maximun thruput for the expense of the system.

73, Don. wb9mjn%wb9mjn@hamgate.cc.wayne.edu

45. Re: [NETSIG:424] Re: Looking for inform

From: WCHAST@delphi.com
Date: Sat, 10 Dec 1994 12:55:54 -0500 (EST)
To: netsig@tapr.org
Message-ID: <01HKH9FM2LUA9210NZ@delphi.com>
Rendered body type: text/plain

You know, though, we migth be able to get space on one of the older transponders on one of the older birds, I am not sure but I think that some of the older ones are being retired in part. Maybe something could be done there.

I bet that if we put our heads together we could come up with a real working network that combined both terrestrial and space links to form a real planet wide network.

```
Chuck Hast
No Dumb Operating System here, only OS/2. Soon to add LINUX.
Delphi:   wchast@delphi.com
AX25 BBS: kp4djt@kp4djt.tpa.fl.usa.noam
ampr.org: kp4djt.ampr.org
AX.121:   3100813077
------------------------------------------------------------------------
```

46. [NETSIG:376] Re: Subnet networking

```
From: genie-postmaster@geis.com
Date: Wed, 30 Nov 94 22:50:00 UTC
To: netsig@tapr.org
Message-ID: <199412101816.AA242953402@relay2.geis.com>
Rendered body type: text/plain
```

```
Original Msg Id: Not Found
genie-postmaster response to your message

    Subject: [NETSIG:376] Re: Subnet networking
    System:  QUIK-COMM
    Date:    Wed 30-Nov-94 22:50

Status: 5   Message picked up by receiving system and
            delivered to all recipients with NO exceptions.
```

47. Re: [NETSIG:427] Re: Subnet networking

```
From: djk@dirku.demon.co.uk (Dirk-Jan Koopman)
Date: Sat, 10 Dec 1994 20:46:54 +0100 (GMT)
To: netsig@tapr.org
Message-ID: <m0rGYgw-0001c6C@dirku>
Rendered body type: text/plain
```

```
Why am I suddenly getting loads of these?
_------------------------------------------------------------------>
> Original Msg Id: Not Found
> genie-postmaster response to your message
>
>     Subject: [NETSIG:376] Re: Subnet networking
>     System:  QUIK-COMM
>     Date:    Wed 30-Nov-94 22:50
>
> Status: 5   Message picked up by receiving system and
>             delivered to all recipients with NO exceptions.
>
>
------------------------------------------------------------------>
Dirk G1TLH
```

48. Re: [NETSIG:417] Re: Looking for information.

```
From: Jack Taylor <n7oo@huachuca-emh8.army.mil>
Date: Sat, 10 Dec 94 13:34:47 MST
To: netsig@tapr.org
Message-ID: <m0rGYY0-0000hWC@dptspd.sat.datapoint.com>
Rendered body type: text/plain
```

```
Regarding an explanation of FlexNet, there is a description in the 9th
ARRL CNC.  It is a non-TNC-2 hardware specific node switch whose code
is somewhat ROSE-like but with an auto-router and is netrom compatible.
(Perhaps a somewhat inaccurate description, but is my impression)  FlexNet
is a German development and is popular in Europe.  I think the key
ingrediant to it's success is with using it with dedicated full-duplex
9k6 interference-free backbones.

73 de Jack
```

49. Re: [NETSIG:414] Re: Looking for information.

```
From: Barry McLarnon VE3JF <bm@hydra.carleton.ca>
Date: Sat, 10 Dec 1994 15:54:49 -0500 (EST)
To: netsig@tapr.org
Message-ID: <199412102054.PAA11990@hydra.carleton.ca>
Rendered body type: text/plain
```

```
> >The gist of it was that there is a need for a network sublayer between the
> >ax.25 link layer and IP.  This sublayer would use a dynamic routing protocol
> >to pull together the rf fragments and provide the illusion of fully connecte
> >d
> >subnetworks to the IP layer.
> >
```

>
> Can the existing routing work correctly if all the stations are on the same
> channel but can only hear each other through a digipeater?

Is this a trick question? :-) I'm not sure what you mean by "the existing
routing". The need for digipeaters implies hidden transmitters, so
digipeaters are unacceptable in properly-designed rf network (unless you
mean a full-duplex repeater, which is quite a different matter).

> >> ROSE is currently working on fixing the routing hole.
> >
> >So tell us more about how (and when) ROSE will fix 'the routing hole'...
>
> The how is what we are going to discuss, I want to put support for UI frames
> in ROSE. Plain IP via UI through ROSE will be ready for testing by New Years.
>
> The additional features I want to add later are Group Broadcasting (one UI
> in and one UI out many different User Ports).
>
> Let's see what NOS needs from the network and if it can be done efficently
> within ROSE or not.
>
> >
> >Let's face it: the *real* problem in amateur packet networking is that
> >amateurs continue to try to use underpowered hardware (slow modems,
> >radios with lousy turnaround time, TNC-based routers, etc), and poorly
> >engineered rf network nodes (hidden transmitters, intermod, etc). No
> >amount of software cleverness can work around these fundamental problems.
> >Unfortunately, the knowledge and expertise (and, yes, the money) needed
> >to do it right are scarce commodities these days.
>
> AGREED! But the problem we are discussing is purely a one of getting the
>   network to provide the features the user application needs to
>   operate with the least headaches and best performance.

Ok, let's talk about applications. NET/ROM was designed around what I would
call a tradition amateur radio view of networking: node hopping, stopping
for a quick chat here and a peek at a bbs there, is sort of analogous to
tuning around the hf bands and making random contacts... but due to the
vagaries of propagation, the band is only open to one small area at any
given time (ok, I won't push that analogy *too* far :-). Also engrained
in the network model is the concept of the regional bbs as server, with
horizon of the network just large enough to permit the servers to
communicate with each other for the purposes of moving mail.

This model won't cut it anymore. To see what's coming in amateur packet
networking (and what already exists now, in a few places), you have only
to look at what's happening now on the Internet. The current 'killer ap' is
WWW. The Internet continues to grow rapidly, but the growth in web-related
traffic over the past year or two is truly astonishing, far outstripping
the other services. Exploring the web is not unlike node hopping in the
packet network, but there are some important differences:

- you don't need a road map to get to your destination, just the name of
  the destination itself... no matter where it is
- the destinations are linked in an intelligent way, so you can easily
  hop from one to another, without regard to distance
- there are better resources available to help identify the best starting
  points for exploration
- the tools needed to traverse and explore the network reside in your own
  computer
- you can easily join the fun and become an information provider yourself
  (not by starting yet another bbs that looks just like a thousand others,
  but by putting up your own unique 'home page')

Of course, there are many other applications that are increasing in
popularity, such as the worldwide convers system, but I don't want to
belabor this... the bottom line is that the future packet network must
provide transparent peer-to-peer wide area networking (and more bandwidth!),
or it will wither and die. NET/ROM certainly can't provide it. ROSE looks
like a better candidate, but TCP/IP is (IMHO) better yet. IP has some
deficiencies when it comes to applying it to rf networks, but I don't
think it requires the whole infrastructure of ROSE sitting underneath it
in order to fix them (if indeed it can fix them at all).

Barry

--
  Barry McLarnon VE3JF/VA3TCP | Internet: bm@hydra.carleton.ca

```
  Ottawa Amateur Radio Club      |  AMPRnet:  barry@va3tcp.ampr.org
  Packet Working Group           |  FreeNet:  aa187@freenet.carleton.ca
```

50. Re: [NETSIG:423] Re: Looking for inform

From: Greg Jones <gjones@tenet.edu>
Date: Sat, 10 Dec 1994 15:32:02 -0600 (CST)
To: netsig@tapr.org
Message-ID: <199412102132.PAA07606@Gayle-Gaston.tenet.edu>
Rendered body type: text/plain

Have you read about RUDAK-U yet ?

Greg

P>S> TAPR still needs another few dollars to make the goal on RUDAK-U
funding.

According to WCHAST@delphi.com:
>
> RE: propagation delays, this is where we need to start putting some of
> our backing behind AMSAT and satellites that can reduce these multi-
> mega switch hops down to say at most 5-7 switch stacks. (at two switches
> per stack that would be from 10-14 real switches in the path)
>
> By proper usage of satellites we could have a very fast and responsive
> network, but I think that we are going to have to put our $$ into this
> need.
>
> I would say that if we could get each "dedicated" packet person to put
> out a few dollars, we would have the money to build a box to either
> add to some bird that is going to be flown, or combine with other AMSAT
> projects to give us that needed transponder to carry the network traffic.
>
> It would require coordination and patience (above all the last) but it
> could be done, and we would have a ALL RADIO LINK between major switch
> sites. The power of X.121 routing would really shine then, given that
> it would be much easier to bring non-US switch sites on line.
>
> We need to really think about this. CCITT already has a protocol that
> as I understand it was designed for satellite links, it is called X.75,
> and is almost a twin brother to X.25. I am sure that Tom would be able
> to take into account the ideosyncrasies of a satellite link. The present
> timers in the AX.25 code will do so well I am sure...
>
> What do you all think??
> --
> Chuck Hast
> No Dumb Operating System here, only OS/2. Soon to add LINUX.
> Delphi: wchast@delphi.com
> AX25 BBS: kp4djt@kp4djt.tpa.fl.usa.noam
> ampr.org: kp4djt.ampr.org
> AX.121:   3100813077
> --
>

51. GEIS.COM Return Message

From: Greg Jones <gjones@tenet.edu>
Date: Sat, 10 Dec 1994 16:05:09 -0600 (CST)
To: netsig@tapr.org (NETSIG mailing), bbssig@tapr.org (BBS SIG mailing)
Message-ID: <199412102205.QAA09156@Gayle-Gaston.tenet.edu>
Rendered body type: text/plain

Thanks for all the mail regarding the return mail.

I took care of the problem yesterday and hopefully it will come to an end
shortly as the mail is handled by that system. There are two users on that
system and both of their mail is getting returned.

Please just delete them until they stop.

Greg

52. Re: [NETSIG:431] Re: Looking for inform

From: WCHAST@delphi.com
Date: Sat, 10 Dec 1994 17:05:52 -0500 (EST)
To: netsig@tapr.org
Message-ID: <01HKHI6IVG0I93D4T9@delphi.com>

Rendered body type: text/plain

Greg can you send me a personal msg, with your provider address, I would like to correspond with you a bit..

My address is in the footer.

Chuck Hast
No Dumb Operating System here, only OS/2. Soon to add LINUX.
Delphi: wchast@delphi.com
AX25 BBS: kp4djt@kp4djt.tpa.fl.usa.noam
ampr.org: kp4djt.ampr.org
AX.121: 3100813077
---

53. Re: [NETSIG:431] Re: Looking for inform

From: WCHAST@delphi.com
Date: Sat, 10 Dec 1994 17:06:01 -0500 (EST)
To: netsig@tapr.org
Message-ID: <01HKHI6QMVT493D4T9@delphi.com>
Rendered body type: text/plain

Tell me more about it, I am all ears!

Chuck Hast
No Dumb Operating System here, only OS/2. Soon to add LINUX.
Delphi: wchast@delphi.com
AX25 BBS: kp4djt@kp4djt.tpa.fl.usa.noam
ampr.org: kp4djt.ampr.org
AX.121: 3100813077
---

54. Reality and a nationwide net

From: Klarsen <k5di@acca.nmsu.edu>
Date: Sat, 10 Dec 1994 18:50:44 -0700 (MST)
To: Sig Networking <netsig@tapr.org>
Message-ID: <Pine.SUN.3.91.941210181306.18423B-100000@kazak>
Rendered body type: text/plain

Seems about every 6 months or so someone has a "good idea" that will achieve a ham radio packet network across this nation and world-wide later. Knowing people talk about how netrom will not work with such a system and a better protocal (software) is required. I am one that has a professional life where this dream is a reality NOW!

From my office I can talk to almost anywhere in the world and do a data transfer in real time. The secret of my companies network? The Telephone Company. We pay a small fee and get instant communications. The system is seldom down and this is because they have multiple routes to Africa and around the world. They put up satellites so that more bandwidth exists to places like Hati where GI's have telephones that have built in answering systems. You may hear " SGT Thomas is not in his foxhole at this time. Please leave a message and I will get asap".

This is today. We hams have no chance of competing with the communications giants of now. Where do we get the money to build and put up in orbit a great satellite? Unless we can sell bandwidth at a profit large compared with cost, it will not be possible. The micro-sat's were put up because people paying millions of dollars to put up their satellites were willing to allow hams to put the stuff on the second stage where it could not cause any real problems. This amounted to a gift from the people paying to the ham radio community.

To be honest with ourselves, we must understand that ham radio can not even think about a national network, much less afford it. What are the BBS Sysops doing to get the mail and such around the nation? We are using the Internet, The Telephone Company and to a less and less extent every day a ham packet network.

Some sobering facts from my knowlege of the situation:

1. For $700 one time cost and $40 per month I can get fidonet.na, about 4 meg of bulletins per day delivered to my computer from a satellite called Planet Connect. Any mail going back must be sent to TN by telephne modem.

2. For $17.00 per month wb7tls in Tucson AZ gets 200 hours of time on the internet from his account glenng@indirect.com and he and I

use this to ftp mail from/to each other and for general chit chat.

3. I and Remi F6CNB have internet access given to us by our employer. We use this to ftp mail and like that.

4. There are 50 or more BBS hams forwarding to each other via the telephone. They are paying the pervailoing rates.

5. I am part of the fidonet system that does cover the world. We can do what we do because we have software that sends out our mail during the cheap part of the night.

So to summarize, we hams have not a chance to do better than we are now because we cannot afford our own network! We can work on local ham radio networks that lead to the home of hams willing to pay the telephone company what it asks to send your message across the country and the world.

73, de karl k5di@k5di.nm.usa.na k5di@acca.nmsu.edu
DOS and Windows some say are bad software, but facts
do not support this. Bill Gates has more than a
Billion dollars!

55. Re: [NETSIG:430] Re: Looking for information.

From: tmoulton@ram.net
Date: Sat, 10 Dec 94 20:58:33 EST
To: netsig@tapr.org
Message-ID: <05904.15021573@RAMail>
Rendered body type: text/plain

>>
>> Can the existing routing work correctly if all the stations are on the sam
>e
>> channel but can only hear each other through a digipeater?
>
>Is this a trick question? :-) I'm not sure what you mean by "the existing
>routing". The need for digipeaters implies hidden transmitters, so
>digipeaters are unacceptable in properly-designed rf network (unless you
>mean a full-duplex repeater, which is quite a different matter).
>

I was trying a black box approach to finding out what the existing IP packages need to fully support their routing.

It is not a trick question. I want to know if a single digipeater can provides enough capibilities for the IP boxes to know about each other and not require any manually defined routes.

Can you answer that question?

>Ok, let's talk about applications. NET/ROM was designed around what I would
>
>call a tradition amateur radio view of networking: node hopping, stopping
[deleted]
>
>This model won't cut it anymore. To see what's coming in amateur packet
>networking (and what already exists now, in a few places), you have only
>to look at what's happening now on the Internet. The current 'killer ap' is

ROSE was designed to provide 100% support for *ANY* AX.25 Application be it keyboard, bbs, dx cluster, tcp/ip, Data is Data.

It was also designed from the start as a National/Global network.

>
>WWW. The Internet continues to grow rapidly, but the growth in web-related
>traffic over the past year or two is truly astonishing, far outstripping

The World Wide Web is a fantastic application that runs on top of IP. It has done a lot to change the Internet.

It is an Application that runs on top of IP.

If we build networks based upon IP we risk barring access to people who don't have the equipment, software or desire to run IP. It kinda risky saying that there are people who don't want to use IP when the very systems carring this message are IP based, but it is the facts of life.

ROSE will not exclude such activity.

Hey wait a sec... if i remember my protocol layers right, IP is only the upper half of Level 3.

On ethernet there are lower layers... in amateur IP packet AX.25 is used for the lower layers...

But AX.25 is a Level 2 protocol.

ROSE is a Level 3 protocol.

tom, w2vy

56. Re: [NETSIG:434] Re: Looking for inform

From: Greg Jones <gjones@tenet.edu>
Date: Sat, 10 Dec 1994 20:09:26 -0600 (CST)
To: netsig@tapr.org
Message-ID: <199412110209.UAA11745@Joyce-Perkins.tenet.edu>
Rendered body type: text/plain

You should join TAPR and get the back issues.

Greg

Here is what was published in March. There have been several changes and Lyle is writing up a current review for the January issue. I emphasis that things have changed in the following, but should give you an idea of what is being done.

As of this time RUDAK-E has been cancelled, so only RUDAK-U is being planned to be operational.

TAPR stills needs another $4000 to fund TAPR's porition of the project.

Digital Communications via Phase 3 D

by Lyle Johnson, WA7GXD

I am sure you have all heard about AMSAT's Phase 3 D spacecraft project. You already know it is a cooperative, international effort. You already know it will be in a high-altitude elliptical orbit. You know it will have 3-axis stabilization, more powerful transmitters than ever, better antennas, cover more bands, etc.

What you probably don't know is that there is now a very good chance that there will be a pair of digital communications systems on board!

That's right, a pair of them!

RUDAK-E

The Munich, Germany-based RUDAK group has always planned on having an experimental digital communications system on Phase 3D. This system is now being unofficially referred to as RUDAK-E (the E is for experimental).

RUDAK-E will be designed for high speed digital data experiments as well as low-power, narrow-bandwidth experiments. One goal, for example, is to try and design a digital communications system where a person could take a low-power SSB radio into the field and perform digital communications through the satellite using omnidirectional antennas.

RUDAK-E should present an interesting opportunity to explore new approaches to digital communications with no "shackles" to existing systems.

The advantages of this kind of design freedom are apparent. The primary disadvantage is that, for most of us, RUDAK-E will not be a service we use -- it will be a vehicle for experimentation.

RUDAK-U

I was in Marburg, Germany, in Februrary for a Phase 3D meeting. During the course of various discussions, we all agreed that it would be a good idea to add a second digital payload to the satellite.

This payload is tentatively called RUDAK-U (Paul Barrow suggests we call it COMDEX instead). U stands for user -- this system is designed to be a communications service provider. It is intended to be open access for today's digital Amateur as well as for tomorrow's.

I will proceed to describe this project in general terms. The terms have to be general, because there are still a myriad of details to be worked out, and because the availability of funds (or lack of them) may significantly alter the final configuration of this system.

SPECTRUM

RUDAK-U will share with RUDAK-E about 40% of the satellite's transponder bandwidth. For most bands, this means about 150 kHz of downlink and 200 kHz of uplink. For 2 meters, it will be much, much less.

Phase 3D has a transponder matrix switch to pipe various receivers into various transmitters. We may be able to tap into this matrix, giving us a high degree of flexibility.

In any event, it appears that we will have uplinks on 23 cm (1270 MHz band). We hope to have uplinks on 70 cm (438 MHZ band) as well as on other bands.

We also hope to have downlinks on 70 cm as well as on S-band (2.4 GHz).

2 meters, if available, will probably be limited to one or two channels.

DATA RATES

Currently, we are looking at 9600 bps as a baseline. This would be standard Amateur 9600 bps practice, using FSK modems and FM radios much like the present UoSATs and KITSATs. These would probably be done using conventional hardware modem designs. This allows a lot of people to be able to use RUDAK-U very soon after launch without having to reconfigure their stations for yet another incompatible mode! But then, if you have a DSP-93 modem, maybe that's not such a hassle...

However, we are also looking carefully at incorporating DSP-based modems in the satellite. This will give us operational flexibility. This satellite is expected to provide service from 1996-2006. We expect that most Amateurs will be capable of running far more sophisticated digital links over this time period. We certainly hope so -- but then we never thought most packet activity would be at 1200 bps AFSK/FM in 1994 when we first started doing this sort of thing in 1981!

We also hope to be able to include at least one fast (say 56 kbps) managed channel for ground-based information servers. More on this below.

CHANNELS

We want to use the spectrum available. There will likely be uplink channels available at any given time - perhaps as many as 12. Downlinks will come and go, but there could be several operational at any given time.

DIGITAL SYSTEM ARCHITECTURE

The current thinking is to have a pair of V53s (80C186-like processors) running near 16 MHz with 16 megabytes of error-correcting memory attached to each one. There will be 16 DMA channels and up to a total of 16 channels of serial data through the DMA system.

The two processors would share information via a dual-ported RAM area or a bidirectional FIFO buffer.

The processors would tie into the other high-speed experiments (RUDAK-E, SCOPE camera) via a CAN-bus controller, possibly an Intel 82527. We are also hoping to put a CAN-bus controller as a secondary link into the spacecraft's primary computer (1802-based IHU) so we can exchange data with the spacecraft.

The processors would then tie into a set of modem boards. These modems would be both hardware (default) as well as DSP-based. Since the DSPs won't have error-correcting memeory, we'll have to test them and reload them from time to time. This should be transparent to the user -- a given modem would be down for a few milliseconds at most.

Finally, this system is autonomous within the Phase 3D spacecraft. The primary computer will allow us to operate, or disallow our operation. It will probbaly select the frequency bands we use for uplink and downlink.

The rest is up to us.

MODEMS

The modems will be different than most current Amateur satellites use. We are used to providing audio to an rf modulator, and getting audio from an IF demodulator.

On this satellite, we will have to generate the transmit signals at an IF frequency near 10 MHz and demodulate from a low-level IF signal in the same frequency range. We thus have control of the type and number of uplinks and downlinks and can manage them.

AO-21's RUDAK-2 system uses this type of scheme, and they have provided details of their implementation with us.

We are currently investigating the use of direct digital syntehsis (DDS) techniques to add flexibility to this concept.

POSSIBLE OPERATIONL SCENARIO

This system will not be a primarily store-and-forward file system like the current UoSATs, MicroSats and KITSATs. Since Phase 3 D will see so much of the earth at a given time, it is better used as a real-time communications resource.

One possibility is to have 3 or 4 ground stations that act as file servers. They would have access to the high-speed link (56 kbps?). You would check into the satellite at 9600 bps and ask for a file. If the file is onboard, it will be immediately downloaded to you.

If it isn't onboard, it will be requested from the ground server, which will then uplink it to the satelite for buffering and downloading to you.

As a user, you'd probably never notice the difference. What you would see is that you asked for a file and almost immediately received it.

Or, you may want to use a digital voice or digital "SSTV" or some other "multimedia" communications station. Given time to organize it all, such real-time non-text uses of digital commuications should become commonplace with this system. After all, we are looking at the 21st century here!

THE PLAYERS

This system design and implementation is being supported by a number of groups. Presently AMSAT-DL, AMSAT-NA, BekTek, Surrey Satellite Technology (SSTL) and TAPR have committed money or people.

The primary team consists of Lyle Johnson (Project Manager), Chuck Green, Peter Guelzow, Harold Price and Jeff Ward.

THE PITCH

Of course, there's always a pitch at the end of this kind of article.

The disclaimers are that this project may fail, we may lack the money to make it happen, the launch could slip, etc. Also, the eventual system may bear little resemblenace to the one outlined here!

Nonetheless, we need your help to make this happen.

The AMSAT organizations need to hear from you that you support this effort aboard Phase 3 D. TAPR needs to hear from you that you support this effort. TAPR has pledged $6,000 (10% of the estimated $60,000 needed to make this a reality) and, frankly, TAPR doesn't have the money. So, in addition to sending in well-wishes, please send money to TAPR and mark the donation for the RUDAK-U project.

According to WCHAST@delphi.com:
>
> Tell me more about it, I am all ears!
>
> ---
> Chuck Hast
> No Dumb Operating System here, only OS/2. Soon to add LINUX.
> Delphi: wchast@delphi.com
> AX25 BBS: kp4djt@kp4djt.tpa.fl.usa.noam

> ampr.org: kp4djt.ampr.org
> AX.121:   3100813077
> --
>

57. Re: [NETSIG:435] Reality and a nationwide net

From: Stu Mitchell <stu@lab.r1.fws.gov>
Date: Sun, 11 Dec 1994 05:01:02 +0000 (GMT)
To: netsig@tapr.org
Message-ID: <Pine.LNX.3.90.941211045730.31199A-100000@ash.lab.r1.fws.gov>
Rendered body type: text/plain

On Sat, 10 Dec 1994, Klarsen wrote:

>   This is today. We hams have no chance of competing with the
> communications giants of now. Where do we get the money to build and put
> up in orbit a great satellite? Unless we can sell bandwidth at a profit
> large compared with cost, it will not be possible. The micro-sat's were
> put up because people paying millions of dollars to put up their
> satellites were willing to allow hams to put the stuff on the second
> stage where it could not cause any real problems. This amounted to a gift
> from the people paying to the ham radio community.
>

I don't think we're competing.... What we do have is a certain
flexibility that a large cooporation does not... If somebody wants to
change, they can with out some supervisor nixing the idea. Have fun and
experiment. That's the point.

Stu Mitchell   stu@lab.r1.fws.gov
USFWS Forensic Lab   mitchellstu@fws.gov
Ashland, Oregon   wd4eck@w7oek
    *** These are my opinions, not the Government's ***

58. proxim rf modems

From: Fred Treasure <ke5ci@astro.wnmu.edu>
Date: Sat, 10 Dec 94 22:24:26 UTC
To: netsig@tapr.org
Message-ID: <15180@astro.wnmu.edu>
Rendered body type: text/plain

KC5AEX and I finished up the a link built with proxim modems today.
The thruput is impressive, about 1600 characters per second doing
point-to-point FTP. The link we built is only about one-half mile
but is not line-of-sight - there is a low hill between the two nodes.
The line-of-sight range appears to be on the order of 3 to 5 miles with
reasonable antennas, in our case a base station vertical and a small
yagi. The total cost of the link was about $500 including the modems,
100' of 9913, two new antennas, and misc. parts. IMHO, pretty good
performance for the price.

59. Re: [NETSIG:435] Reality and a nationwid

From: WCHAST@delphi.com
Date: Sun, 11 Dec 1994 00:42:30 -0500 (EST)
To: netsig@tapr.org
Message-ID: <01HKHY4A8MT494KSOZ@delphi.com>
Rendered body type: text/plain

Why do people climb mountains??
    Because they are there.

Why do people work DX, it has no logical reason to be.?
    Because it is there.

Why do people do so many things that may not look logical?
    Because it is there to be done.

Yes, I too can do the same sort of things that you have pointed out,
I exchange E-Mail with friends I met on a work trip last summer to
Kazakstan, I do so with the Internet.

But I also am one of those people who enjoy doing things to make them
work, and try to do so with what we have at hand. And one other point.

If most hams had your attitude, maybe the LEO satellites which are the
"in thing at the commercial level" would not have come to pass as they
have, it was amateur LEO's that demonstrated the viability of such a
system, now the commercial boys are fighting over spectrum to put up

their own... WE HAMS showed them the way.

Yep there is a lot of stupidity out there, we have let our selves be controlled by the 3 sisters of ham radio, Icom, Kenwood, Yaesu. And for that reason it has taken them 10 years to even put a port on a radio that is to even plug a TNC into, and though they would have you think otherwise, none of them are yet really 9k6 ready as they would like you to think. We want stuff out of a box, instant gratification, no work, just plug and play, well I can do that with boxes and the wire line side of things, but it just "ain't fun".

The digital side of packet radio has progressed much more rapidly than the RF side of packet radio. We are still out there running 15khz bandwidth FM voice, we should have been progressing with digital voice, but in most places just try to get repeater pairs for digital anything. FM or die, and we die...

But some of us still want to roll our own, we have tasted the flavor of success, when all that is left is that ragged "ham packet network" and the authorities send a vehicle to have you "transported" to the "site" because that ragged underfunded packet network was all there was into a emergency site.

Those wonderful networks you have so much fun playing on, they usually "ain't worth a darn" when the big ones come, I know I have been through several of them and in one case the amateur packet network was the only one of TWO networks left up and running in a small country after a 7.4 richter quake struck the east coast of that country. There is a certain tenacity and even rough longivity to what we as amateurs do that makes our work though by your standards "primitive" and futile, pay off in very interesting ways.

Believe me I HAVE BEEN THERE. and I for one and not going to be put off just because I can do it so much faster or easier with a telephone line.

Part of the fun is rolling your own...

So while you play with the wires I will continue to play with the futile RF links... And still play with the wires too...

If needs be we have to hot glue a box to a satellite in order to get it up there, go to it, hot glue the thing, but don't let the fact that the telco seems to do it so much faster ruin your day... There are some things that those people just don't do well and disasters is one of them.

Again I have been there...

Chuck Hast
No Dumb Operating System here, only OS/2. Soon to add LINUX.
Delphi: wchast@delphi.com
AX25 BBS: kp4djt@kp4djt.tpa.fl.usa.noam
ampr.org: kp4djt.ampr.org
AX.121:   3100813077
---

60. Re: [NETSIG:437] Re: Looking for inform

From: WCHAST@delphi.com
Date: Sun, 11 Dec 1994 00:42:45 -0500 (EST)
To: netsig@tapr.org
Message-ID: <01HKHY4W6GNI94KSOZ@delphi.com>
Rendered body type: text/plain

Well, that data on the satellites is very interesting. I am looking foward to being able to replace the reliance on non-amateur communications systems to link our RF networks. This looks like a first step forward. It would be wonderful to replace our land line links out of Tampa with all RF links on amateur based equipment and bands.

Do not get me wrong I appreciate the bandwidth such as we have available here in Tampa, with links to three different parts of the USA. But I would like to see us do it 'our selves' with our own RF.

I will be re-joining TAPR, this is a real need and I think we need to put our money into projects like this, if we did rather than pay for land line fees and service provider fees, you know we might already have had a nice bird up there carrying a lot of it, regardless of what some people have just said.

It should be done "because it's there to be done".

Chuck Hast
No Dumb Operating System here, only OS/2. Soon to add LINUX.
Delphi: wchast@delphi.com
AX25 BBS: kp4djt@kp4djt.tpa.fl.usa.noam
ampr.org: kp4djt.ampr.org
AX.121:   3100813077
---

61. Re: [NETSIG:439] proxim rf modems

From: WCHAST@delphi.com
Date: Sun, 11 Dec 1994 00:47:03 -0500 (EST)
To: netsig@tapr.org
Message-ID: <01HKHYABK4F68Y954O@delphi.com>
Rendered body type: text/plain

Like more info on those modems, where were they published??

Chuck Hast
No Dumb Operating System here, only OS/2. Soon to add LINUX.
Delphi: wchast@delphi.com
AX25 BBS: kp4djt@kp4djt.tpa.fl.usa.noam
ampr.org: kp4djt.ampr.org
AX.121:   3100813077
---

62. Re: [NETSIG:440] Re: Reality and a nationwid

From: Klarsen <k5di@acca.nmsu.edu>
Date: Sun, 11 Dec 1994 02:09:26 -0700 (MST)
To: netsig@tapr.org
Message-ID: <Pine.SUN.3.91.941211013030.24749A-100000@kazak>
Rendered body type: text/plain

On Sat, 10 Dec 1994 WCHAST@delphi.com wrote:

> Why do people climb mountains??
>   Because they are there.

        No, I climbed because I wanted to prove to myself that I did it.

>
> Why do people work DX, it has no logical reason to be.?
>   Because it is there.
>
        DX is a game. You need loads of time. And a DX Cluster

> Why do people do so many things that may not look logical?
>   Because it is there to be done.

        Sorry that doesn't seem to make sense Chuck.

>
> Yes, I too can do the same sort of things that you have pointed out,
> I exchange E-Mail with friends I met on a work trip last summer to
> Kazakstan, I do so with the Internet.
>
        My son has a contract to put in a sewer and curbs and gutters in
a city on the Black Sea in Russia. Would you believe there is no internet
at all in that part of Russia?

> But I also am one of those people who enjoy doing things to make them
> work, and try to do so with what we have at hand. And one other point.
>
        Yes, me too. I am experimenting with IP routes and all that with
jnos and the x1j nodes. Good Local network...

> If most hams had your attitude, maybe the LEO satellites which are the
> "in thing at the commercial level" would not have come to pass as they
> have, it was amateur LEO's that demonstrated the viability of such a
> system, now the commercial boys are fighting over spectrum to put up
> their own... WE HAMS showed them the way.
>

Bill Gates put up 4 Billion dollars for LEO. You can be sure he had more than the amateur experiance to draw from. This will take a national effort to install and it will bring "the information hiway" to places like Deming NM and the Black Sea.

> Yep there is a lot of stupidity out there, we have let our selves be
> controlled by the 3 sisters of ham radio, Icom, Kenwood, Yaesu. And
> for that reason it has taken them 10 years to even put a port on a radio
> that is to even plug a TNC into,

Actualy it was Kantronics that did that first. Not well at first but better now. I am using the "black" TEKK radio's on my Local Network.

and though they would have you think
> otherwise, none of them are yet really 9k6 ready as they would like you
> to think. We want stuff out of a box, instant gratification, no work,
> just plug and play, well I can do that with boxes and the wire line side
> of things, but it just "ain't fun".

Chuck if your sayin that since 9600 baud is plug and play, you have not put any in service. Try it. It's a real challenge to do it right!

>
> The digital side of packet radio has progressed much more rapidly than the
> RF side of packet radio. We are still out there running 15khz bandwidth
> FM voice, we should have been progressing with digital voice, but in most
> places just try to get repeater pairs for digital anything. FM or die,
> and we die...

Surprise! There is nothing real wrong with Mr. Armstrong's FM. It is a good way to modulate a rf carrier and the understanding of how FM works is very high. It's used a lot.

>
> But some of us still want to roll our own, we have tasted the flavor of
> success, when all that is left is that ragged "ham packet network" and
> the authorities send a vehicle to have you "transported" to the "site"
> because that ragged underfunded packet network was all there was into
> a emergency site.

Yes I have a car battery on my packet radio systems at home and at te hill sites. They will be there in an emergency.

>
> Those wonderful networks you have so much fun playing on, they usually
> "ain't worth a darn" when the big ones come, I know I have been through
> several of them and in one case the amateur packet network was the only
> one of TWO networks left up and running in a small country after a
> 7.4 richter quake struck the east coast of that country. There is a
> certain tenacity and even rough longivity to what we as amateurs do that
> makes our work though by your standards "primitive" and futile, pay off
> in very interesting ways.

In the Balkins, only ham radio sent out conditions of the fighting by hf ssb. This was because no-one wanted to enter the area. It is VERY dangerous. The poor ham lives there and sends out the info.

>
> Believe me I HAVE BEEN THERE. and I for one and not going to be put off
> just because I can do it so much faster or easier with a telephone line.
>
> Part of the fun is rolling your own...
>
> So while you play with the wires I will continue to play with the futile
> RF links... And still play with the wires too...

You didn't read the title of my message Chuck. It is about a national network, not the local ones. I do not "play with wires". I use a system that brings communications to my home just as you use to send the message I am commenting to.

>
> If needs be we have to hot glue a box to a satellite in order to get it
> up there, go to it, hot glue the thing, but don't let the fact that
> the telco seems to do it so much faster ruin your day... There are some

> things that those people just don't do well and disasters is one of them.
>
>
        My company, the US Army, 10th largest in the world and going
down, has had all kinds of problems in emergencies. But we have the commo
battle almost won. We can talk by part wire, part satellite to most
places instantly. This is much better than when you have been there. It
is new and it works.

> Again I have been there...
>
        Glad you have been. Are you going back?

> --
> Chuck Hast
> No Dumb Operating System here, only OS/2. Soon to add LINUX.

        Try slackware version 2.01 Chuck. That is what I'm setting up on
my big 486-66 and want to run on my laptop.

> Delphi: wchast@delphi.com

> AX25 BBS: kp4djt@kp4djt.tpa.fl.usa.noam
> ampr.org: kp4djt.ampr.org
> AX.121:   3100813077
> --
>

73, karl k5di

63. ROSE Experiment and other

From: <MITCHELL.T@OCF.compuserve.com>
Date: 11 Dec 94 06:57:03 EST
To: <netsig@tapr.org>
Message-ID: <OCF_3443-72431@CompuServe.COM>
Rendered body type: text/plain

*Message:
From: MITCHELL.T at CCPO.KCPO
Date: 12/10/94 1:28PM
To: INTERNET:netsig@tapr.org at OCF_INFORM
Subject: ROSE Experiment and other
Contents:
I am very intrigued with the discussion of NET/ROM and ROSE. Not being
very well versed in ROSE I am wanting to do some playing and tinkering.
I have played with ROSE at the user level but not much drabbling in the
SYSOP relm.

What I want to do: Is is possible to take a X1J node on channel A and using
the RS-232 port communicate to the RS-232 port on a ROSE switch that is
on channel B. I want to make a cross-through port that will allow me to
play on ROSE, while having connectivity on the NET/ROM side (25 plus node
network.)

I know that Tom was talking about the interface for ROSE being similar to
X1J in the future, what exactly?

I think it would be really neat (COOL!) if a smart node was developed to
cross a NET/ROM network to a ROSE and vise versa. Even better it would allow
multiple connections. Say NET/ROM to ROSE to NET/ROM to ROSE....
This would get rid of the connectivity barrier and allow seperate groups
to work together without changing their current operation.

Any input or ideas???

By the way I will be forwarding the TEKK radio data next week, hope to
have some responses soon. Thanks to everyone who contributed!

Tim Mitchell, KA5RYF/0

64. Re: [NETSIG:435] Reality and a nationwide net

From: Fred Peerenboom <af780@DAYTON.WRIGHT.EDU>
Date: Sun, 11 Dec 1994 08:34:29 -0500
To: netsig@tapr.org
Message-ID: <9412111334.AA29177@dayton.wright.edu>

Rendered body type: text/plain

reality? no that is the easy way out. the lazy ham's route to ham radio.
If we keep using the lazy man's network and paying for it, soon the FCC will
say, "Hey guys, as long as you are using the telephone networks you don't
need the radio networks and frequencies any more so we will sell them at
auction as they are in great demand anyhow."   I know, not a professional
way to say it or write it, but true. How many watched the latest FCC auction
on C-span on the 10th of Dec. ?   If you had listened to the speeches made
by Al Gore and the rest you would be out there trying to figure out how to
make better use of the spectrum that we still have left before they decide that
we no longer need it because we can use the internet or telephone link. The
main problem with that is there are more areas in the country where hams do
NOT have access to internet or even compuserve or the others without making
a long distance phone call than there are areas that it is easy to access, or
better yet, free as it is here in Dayton via the Freenet system. Those are
the areas that they hams need the good networks via radio link. I think that
the old amateur radio spirit that used to exist in this country has gone the
way of the rest of the ambition that people once had. That ambition that
makes inventors invent and developers develope. And I don't mean more housing
areas or resorts when I speak of developers. Why are 99 percent of all ham
radios made in the orient? whey do most of the cellular phones come from the
same places, the tvs and stereos ditto?
    Sorry guys, I didn't mean to do the soap box bit, but I have been reading
the net_sig thread for some time now and I see more "negative" responders
with more reasons why we "shouldn't even bother" to do it in them then I see
ones that say, "hey, let's try this, or Hey we did this and it worked"

Fred   ke8tq@n8acv.#day.oh.usa.noam   af780@dayton.wright.edu
             Fred.Peerenboom@bbs.dmapub.dma.org

65. Re: [NETSIG:439] proxim rf modems

From: Fred Peerenboom <af780@DAYTON.WRIGHT.EDU>
Date: Sun, 11 Dec 1994 08:46:57 -0500
To: netsig@tapr.org
Message-ID: <9412111346.AA00898@dayton.wright.edu>
Rendered body type: text/plain

Proxim rf modems?   Where, how much?   Baud rate? Full duplex?
Frequency?   Sounds like a winner to me. Lets hear more about them
so that the rest of us can look into it too.
Thanks from all of us for the info in advance.
Fred   ke8tq@n8acv.#day.oh.usa.noam

66. Re: [NETSIG:445] Re: Reality and a nationwide net

From: Klarsen <k5di@acca.nmsu.edu>
Date: Sun, 11 Dec 1994 07:37:32 -0700 (MST)
To: netsig@tapr.org
Message-ID: <Pine.SUN.3.91.941211073320.28756A-100000@kazak>
Rendered body type: text/plain

Fred you didn't read the title of the message. I said it is not
practicle to consider a nationwide net. I said lets keep working on local
nets and make them better. The local net connects the ham in a small town
without internet to a town that has it. We are doing this now. Lets keep
doing this and stop spending money/time on a nationwide network.

        73, de karl k5di@k5di.nm.usa.na k5di@acca.nmsu.edu
           DOS and Windows some say are bad software, but facts
           do not support this. Bill Gates has more than a
                        Billion dollars!

67. Re: [NETSIG:443] Re: Reality and a natio

From: WCHAST@delphi.com
Date: Sun, 11 Dec 1994 10:52:04 -0500 (EST)
To: netsig@tapr.org
Message-ID: <01HKIJDI3QY694KANK@delphi.com>
Rendered body type: text/plain

Ok now I think YOU are doing the reality check... If you will look at
it, your observations are basicly the same ones that others of us apply
to trying to build a planet wide amateur digital network...

>   No, I climbed because I wanted to prove to myself that I did it.

There it is, we want to prove that we can do it. And it can be fun to
do at the same time. It is a mountain...

>   DX is a game. You need loads of time. And a DX Cluster

Yes but at first sight it has no logical reason to be, but here is the
kicker, those guys are usually VERY good FAST traffic handlers in emergency
situations... So when you remove what looks illogical there is logic to it.

>   Sorry that doesn't seem to make sense Chuck.

I am sorry but the spanish language came out in that one, it should have
been "because it is a challenge to them".

There is logical reason that people do a lot of things, but it is the
nature of the species to do such things. You may call it the spice of life,
whatever. The challenge is there, when people loose it they become very
boaring...

As to no internet in the Black Sea area of Russia, yes I can believe it.
Just as I know that for instance the microwave links are TUBE equiment and
the telephone exchanges are step by step... I have photos and videos to show
it...

The excusses given and they are valid from a technical standpoint is that
those tubes and step by step exchanges are not as likelly to be damaged by
EMP... But I still wonder if it is another reason....

Also from personal experience I have no use for Bill Gates, I do not
envy his money just the tactics that he has used to aquire some of it...

The thing with the LEO's is that AMATEURS proved it's viability, not
Mr. Gates. If you don't believe it ask the people at VITA...

As to 9k6 and the radios, I have been using the TEKK radios now for several
years, and No it was not Kantronics that did it first, I think that the
first ones to do radios for amateur usage was GLB, I know, again I installed
24 of them on a 19k2 network in Costa Rica, by the way they ran right out
of the box, something that did not always happen with the kantronics boxes.

The GLB Netlink radios were one of the best designs I have seen and I
still hold the radios up to be a standard that the others have to meet
and again, so far I have not seen anyone do so...

These radios were on the market back in 1987 or there abouts. I started
installation of the network in 1988.

Back then no one could even think about going much faster than 1200b ohh
yea, there was 2400b, and they thought they were moving...

Yes, we have had the equipment, but the GLB netlinks were expensive (again
that is relative) at $600 each, but they would run and the receivers
would not desence up on top of a mountain that had 6 tv transmitters and
MANY FM stations and hundreds of VHF/UHF repeater systems. No cavities
needed these radios had them in them, and they were GOOD. But again people
were saying "we don't need to go that fast, who can type that fast?" so
we are still stuck with a large 1200b base and commercial radio manufactures
who build radios and stick a pigtail on them and tell you they are 9k6
ready... Well you have to go inside them and re-work them to make them
even close to being 9k6 ready. They have put E type ceramic filters in
them, the time from PTT active to good data out is at least 150 ms...
most are around 250 to 300... Chee that is 250 to 300 chars at 9k6...

No... I do not mean that radios are anywhere near plug and play for 9k6.

But I still have fun making them so. B=}

No there is nothing wrong with FM, your basic 9k6 or 19k2 RF data links
out there are FSK AKA as FM... The FM that is a pain is the one that
has a repeater on it, said repeater gets used only 5 minutes a day, and
at the same time a large group of digital people who need a good repeater
can not get a channel pair because "they are all taken".. That is the
FM I am talking about... And the argument that these people use many times
is "it ain't gonna happen" meaning digital voice, digital ect is never
going to come.. Digital Cellular and Digital trunking and other commericial
RF services have already arrive to take the place of amateur digital
voice so why should we change or accommodate.

This is the attitude that has become all too common. And even though I can
probably get a digital cellphone for a lot less (over the short term) than
I can help build a digital data network, there is NO JOY in doing it, it

just cost money and the silly thing rings when you are setting on the john
trying to get your thoughts together and get rid of a load...

>   Yes I have a car battery on my packet radio systems at home and
>   at te hill sites. They will be there in an emergency.

Ahh, that is what I am talkiing about, having your network ready, and the
larger we make this network the more reliable it will be. There will be
more alternate paths, greater distances to cover and therefore groups who
would be remote from the site of the disaster can provide services they
otherwise might find dificult. In many cases the more distant certain
services are from a disaster the better they can handle some problems,
they are not looking at things right in the eye.

>   You didn't read the title of my message Chuck. It is about a
>   national network, not the local ones.

Yes I did and the fact is a nation wide network is built of local ones...
That is how all of them are put together...

Yes indeed the US military has done wonders with communications, but you
know something, a lot of those people were hams and they brought a lot of
those ideas into the service from experience with ham radio. Remember we
are still pretty well thought of in the military circles, something I can
not say for in other areas.

>   Glad you have been. Are you going back?

Every time I am asked... That is part of what ham radio is all about...
In my work I am also asked to go to such places, and we keep on falling
back on Amateur designed technology because it works... It has been as
you say in the military "field proven" By way, I seem to remember a certain
U.S. Army person at a FEMA meeting explaining that AX.25 was the only thing
that worked reliably in the Gulf War.

I will have to dig that one out of the files... Was quite interesting.

What I am trying to get at though is we DO have the capacity to build
a nation or even a planet wide network, it will take time and dedication
there will be no money in it for us, but there will be a certain satisfaction
in having "climbed that mountain". Something, though I enjoy the Internet,
I do not get from working the Internet.

I sat here last night and worked stations out in TX and OK over the packet
network, yes with the help of a fibre link from Tampa to Dallas, but all
of the rest of it was RF.. Now with a satellite we could make that fibre
link a secondary path (never give ANYTHING back just because you have your
own bandwidth! only return it if the owners ask for it!) and the primary
path would be ALL RF on amateur based systems.

The point here is that there are two large neworks, and satellite would
allow them to connect over AMATEUR based RF, you add to those two networks
the many others out there and you HAVE your nation wide network. All we
need is the bird in the sky... The terrerstrial part is pretty much already
there.

I will persue this one no more... I have taken up too much bandwidth with
it already. Karl if you are happy with the network as it is and you enjoy
doing all the communications over the commercial systems, so be it... But
not all of us feel that way, and I think that there are enough of us out
there interested in doing a nation wide network, if we can just get them
to understand what is needed. Perhaps this is the hardest part of all, I
do not think it is a money problem, it is a people problem...

But if every once in a while you get a "itch" to do it all over amateur
RF, then come join us, and lets all push in the same direction, negative
comments will get us no where. The mountain is there, it is a big one,
but it can be climbed...

Chuck Hast
No Dumb Operating System here, only OS/2. Soon to add LINUX.
Delphi: wchast@delphi.com
AX25 BBS: kp4djt@kp4djt.tpa.fl.usa.noam
ampr.org: kp4djt.ampr.org
AX.121:   3100813077
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68. Re: [NETSIG:444] ROSE Experiment and oth

From: WCHAST@delphi.com
Date: Sun, 11 Dec 1994 10:52:26 -0500 (EST)
To: netsig@tapr.org
Message-ID: <01HKIJEO73UC94KANK@delphi.com>
Rendered body type: text/plain

Tim;
I will make some comments on parts of your msg.

>What I want to do: Is is possible to take a X1J node on channel A and using
>the RS-232 port communicate to the RS-232 port on a ROSE switch that is
>on channel B. I want to make a cross-through port that will allow me to
>play on ROSE, while having connectivity on the NET/ROM side (25 plus node
>network.)

X1J uses a different async communications protocol than ROSE. ROSE uses
async X.25 as it's async communications. You can connect X1J and ROSE
together on the HDLC port. And in fact if TheNet will allow a link via
two digitpeaters, you can connect two TheNet networks separated by a
ROSE network and the two TheNet networks will actually start talking
in the NetRom protocol. ROSE is PID transparent so it will pass the
NetRom PID once the link has been set up, but this must be done on the
HDLC side.

>I know that Tom was talking about the interface for ROSE being similar to
>X1J in the future, what exactly?

Tom is working on a NetRom like user interface, i.e. you connect to the
switch like you connect to a NetRom device and then you issue connects
through the network. This is for node hoppers and others who have a
psycological need to connect to something before they connect to their
correspondent.

As to the smart node/switch. ROSE will already allow you to connect to
TheNet, and X1J and the other varieties of TheNet that are not of the
TheNet 2.09 2.10 variety will allow connects to ROSE. (Those that do
not disallow any "digipeat" looking links).

ROSE is already transparent to NetRom, but NetRom networks are NOT trans
parent to ROSE. I think that they need to work on the transparency issue
first, once that is done the rest will be pretty easy. If our network can
pass NetRom protocol, why can't NetRom be worked over to pass non $F0 PID's
such as ROSE. It took Tom Moulton a while to get it right, but in the end he
did and it works nicely.

If the TheNet boys will just add that ability to TheNet, then the inter-
operability will be much closer.

Chuck Hast
No Dumb Operating System here, only OS/2. Soon to add LINUX.
Delphi: wchast@delphi.com
AX25 BBS: kp4djt@kp4djt.tpa.fl.usa.noam
ampr.org: kp4djt.ampr.org
AX.121:   3100813077
---

69. S band viable in the USA? (was Re: Looking for infor).

From: wb9mjn@wsu1.n8fow.ampr.org
Date: Sun, 11 Dec 94 16:19:10 UTC
To: netsig@tapr.org
Message-ID: <34514@wsu1.n8fow.ampr.org>
Rendered body type: text/plain

Hi, with the S band reallocations from Ham Radio to commercial pcs, past and
future, is it practical to be thinking of using S band for amateur satellite
downlinks?

 First off, will there be any band left?

 Second, will all the PCS boxes floating around cause desense, or even have
broadband noise on the allocation? Even 60 dB down transmitter noise, walking
down the street in front of ur house is going to be a problem at S band, if
the PCS allocation buts up to the Ham Satellite allocation. Low Sidelobe
antennas at S band would be quite large.

  I personally have avoided S band for terrestrial link developement be-

cause of this situation.

  Probably the only practical way to use S band, will be Spread Spectrum. If u can t beat , join em.

73, Don. wb9mjn%wb9mjn.ampr.org@hamgate.cc.wayne.edu

70. Re: [NETSIG:436] Re: Looking for information.

From: Barry McLarnon VE3JF <bm@hydra.carleton.ca>
Date: Sun, 11 Dec 1994 14:39:35 -0500 (EST)
To: netsig@tapr.org
Message-ID: <199412111939.OAA14292@hydra.carleton.ca>
Rendered body type: text/plain

> I was trying a black box approach to finding out what the existing IP
> packages need to fully support their routing.
>
> It is not a trick question. I want to know if a single digipeater can
> provides enough capibilities for the IP boxes to know about each other and
> not require any manually defined routes.
>
> Can you answer that question?

If it is truly a digipeater in the sense that term is usually used, I would say that the answer is "no".

[lots deleted]

> ROSE was designed to provide 100% support for *ANY* AX.25 Application be
> it keyboard, bbs, dx cluster, tcp/ip, Data is Data.
>
> It was also designed from the start as a National/Global network.

Agreed... but see below.

> >WWW. The Internet continues to grow rapidly, but the growth in web-related
> >traffic over the past year or two is truly astonishing, far outstripping
>
> The World Wide Web is a fantastic application that runs on top of IP.
> It has done a lot to change the Internet.
>
> It is an Application that runs on top of IP.
>
> If we build networks based upon IP we risk barring access to people who don't
> have the equipment, software or desire to run IP. It kinda risky saying that
> there are people who don't want to use IP when the very systems carring this
> message are IP based, but it is the facts of life.

No, the facts of life are these: nobody will be barred access simply because they choose not to run IP. Just as a user with a dumb terminal and a modem can dial up a server and access his mail, news, browse the Internet, etc, so can an AX.25 packet user connect to a gateway (NOS or Unix box) and obtain similar services on the rf network. But most users will *want* to run IP, in order to get the most out of all the nifty new IP-based applications. And it is getting easier and easier to do so. Most new OS's for personal computers are including support for TCP/IP, so IP is likely to be lurking in your system whether you like it or not. Using all of the IP applications on AX.25 rf networks is not as easy as it could be yet, but it's getting there.

> ROSE will not exclude such activity.
>
> Hey wait a sec... if i remember my protocol layers right, IP is only the
> upper half of Level 3.
>
> On ethernet there are lower layers... in amateur IP packet AX.25 is used for
> the lower layers...
>
> But AX.25 is a Level 2 protocol.
>
> ROSE is a Level 3 protocol.

My point exactly. IP does not fit the OSI model... it is sometimes referred to as a Level 3.5 protocol, since it largely deals with internetworking issues. These issues were largely ignored by the folks who brought us X.25, whose telephone company mindset led them to envision large networks with uniform protocols, controlled by a small number of major players (the PTTs or equivalent)... in other words, the very antithesis of the amateur packet network! IP needs a little help at the subnet end of Level 3,

which is basically a local or regional issue. It doesn't need a full-blown
Level 3 protocol, with all of its complexities, incompatible addressing
scheme, etc, sitting underneath it to provide that help... that would be
tremendous overkill. In fact, I think the job can be done simply by
adapting existing IP routing protocols and using well-designed rf network
topologies.

> tom, w2vy

Barry

--
  Barry McLarnon VE3JF/VA3TCP | Internet: bm@hydra.carleton.ca
  Ottawa Amateur Radio Club | AMPRnet: barry@va3tcp.ampr.org
  Packet Working Group | FreeNet: aa187@freenet.carleton.ca

71. Re: [NETSIG:423] Re: Looking for inform

From: Tim Baggett <tim@nmsu.edu>
Date: Sun, 11 Dec 1994 13:01:27 -0700 (MST)
To: netsig@tapr.org
Message-ID: <Pine.3.87.9412101320.B986-0100000@wilma>
Rendered body type: text/plain

On Sat, 10 Dec 1994 WCHAST@delphi.com wrote:

> By proper usage of satellites we could have a very fast and responsive
> network, but I think that we are going to have to put our $$ into this
> need.

> What do you all think??

I think this is GREAT actually! There is a satellite (or system of them)
called ACTS. I think NASA has something to do with the administration of
the system. Anyhow, it operates at C band I believe, and with a satellite
uplink/downlink system composing of a 4 foot dish and a small rack of
equipment you can have a T1 (1.544 Mbps) link somewhere. The New Mexico
State University Telemetering Center recently had such a link installed
to provide a secondary T1 link to Apache Point Observatory. The
observatory is one of the first in the nation to be fully remote
controlled via the Internet. Studies were done to see if the propagation
delay to the satellite and back to Earth would be something astronomers
could live with to avoid the possibility for different arrival rates of
the packets via the land line T1. But it looks like I'm digressing....

To bring this down to ham radio terms, let me throw out some ideas as to
how I think something should be implemented. At various parts of the
country there could be these satellite stations that are point to point
links to other locations. Neighboring satellite stations can be
interconnected via T1 RF links.

As for the satellites, I have been wondering why AMSAT is moving to
implement the 'brains' of their digital network on the Phase 3D
satellite. I heard a very good presentation of this given last spring at
TAPR. This isn't meant in any way to blast AMSAT for what they are doing,
its just I don't understand why they are doing it and feel a different
approach might be better. How about implementing something similar to
NASA's Tracking and Data Relay Satellites (TDRS)? These satellites look
like an RF mirror. They take what is received within a certain passband
and retransmit it right back down to the ground. The advantages they
obtain are fewer things to go wrong in orbit, and they can implement
better modulation and coding just by changing things on the ground (this
is where NMSU Telemetry lab comes into play again).

I think it could be possible for the amateur community to design such a
satellite that acts like a 'mirror' instead of a flying PBBS. The entire
passband of the satellite could be split up into different channels for
different users. The satellite would 'reflect' the signals back down to
Earth, where the receiving stations could 'tune' into which channel the
transmitting station is sending to you on. A full duplex system could
also be set up this way to provide 9600 bps, 19.2 Kbps, or 56Kbps two way
links. Tere would not be any contention on the channel as each channel of
the passband would be dedicated to a particular ground station.

BTW, I've seen some comments about the propagation time to a satellite and
back is 3 seconds. I think for a geostationary satellite the time is more
on the order of 2/3 of a second, which compared to a few netrom node hops
at 1200, sounds pretty good to me.

Could this be done? Not without the amateur radio work cooperating. Well,

I see the coffee pot is done, so I'll go wake up from this dream.

> No Dumb Operating System here, only OS/2. Soon to add LINUX.

Good move!

73
Tim, AA5DF

tim@nmsu.edu

72. Re: [NETSIG:447] Re: Reality and a nationwide net

From: Fred Peerenboom <af780@DAYTON.WRIGHT.EDU>
Date: Sun, 11 Dec 1994 17:18:11 -0500
To: netsig@tapr.org
Message-ID: <9412112218.AA13855@dayton.wright.edu>
Rendered body type: text/plain

Okay, I do agree with that concept. Only there are a few areas of the states
that are almost out of range. One place that comes to mind is the area that
I am formerly from, The South Central Upper Peninsula of Michigan. It's
a looooong way to any minor metropolitan area, let alone a major one. That
is where the sat-link will come in hady. We all can't have it as nice as
we do here in Dayton with the 19k2 link between Cincini, Dayton and Columbus.
Anywho, I think we need to incorporate all and every network tool that we can
and if not national net, at least a regional sub-net that is hooked to a
larger network.
Fred   ke8tq@n8acv.#day.oh.usa.noam

73. RE: [NETSIG:438] Re: Reality and a nationwide net

From: "John W. (Bill) Hays, W0OMV" <billh@INS.INFONET.NET>
Date: Sun, 11 Dec 1994 17:18:28 CST
To: netsig@tapr.org
Message-ID: <00988CA3.ADD610C5.146@INS.INFONET.NET>
Rendered body type: text/plain

KARL'S STATEMENT Oooops..is exactly what we need!!!! It is all it takes
to get some enterprising ambitious ham to be told he can't do something
and he'll say,"The H--- I can't" and then go quietly off in his shack
and do exactly what he was told he couldn't!! And V-O-I-L-A the basis for
the answer to our goal, if not the realistic solution.
Seems I heard a story abt a young ham being told that it was "impossible"
to port TCP/IP over to a microcomputer from a main frame system and get it to work....
73, Bill, W0omv

74. Re: [NETSIG:451] Re: Looking for information.

From: tmoulton@ram.net
Date: Sun, 11 Dec 94 21:34:31 EST
To: netsig@tapr.org
Message-ID: <05906.15021573@RAMail>
Rendered body type: text/plain

>If it is truly a digipeater in the sense that term is usually used, I would
>say that the answer is "no".
>

If traditional you mean a Transparent ax.25 routing device like is in a tnc
then i wonder why not. If each station were to digi arp frames via W2VY-2
then all stations would see the apr info and the ax.25 path to access the
systems.

>No, the facts of life are these: nobody will be barred access simply because
>they choose not to run IP. Just as a user with a dumb terminal and a modem
>can dial up a server and access his mail, news, browse the Internet, etc, so
>can an AX.25 packet user connect to a gateway (NOS or Unix box) and obtain
>similar services on the rf network. But most users will *want* to run IP,
>in order to get the most out of all the nifty new IP-based applications.
>And it is getting easier and easier to do so. Most new OS's for personal
>computers are including support for TCP/IP, so IP is likely to be lurking
>in your system whether you like it or not. Using all of the IP applications
>on AX.25 rf networks is not as easy as it could be yet, but it's getting
>there.

But if the backbone is based upon IP there will be regions of the country
where a backbone runs, but people will need to have their data travel many
miles to get to one of those Gateway system.

Whereas if the backbone were one that provided support for *all* ax.25 uses

at every point then this would not be a problem.

[stuff deleted]
>My point exactly. IP does not fit the OSI model... it is sometimes referred
>to as a Level 3.5 protocol, since it largely deals with internetworking
>issues. These issues were largely ignored by the folks who brought us X.25,
>whose telephone company mindset led them to envision large networks with
>uniform protocols, controlled by a small number of major players (the PTTs
>or equivalent)... in other words, the very antithesis of the amateur
>packet network! IP needs a little help at the subnet end of Level 3,
>which is basically a local or regional issue. It doesn't need a full-blown
>Level 3 protocol, with all of its complexities, incompatible addressing
>scheme, etc, sitting underneath it to provide that help... that would be
>tremendous overkill. In fact, I think the job can be done simply by
>adapting existing IP routing protocols and using well-designed rf network
>topologies.

Here is where we disagree.

My view of TCP/IP is a User Application that communicates from User PC to
User PC. Not a Network.

If we have your fully connected ip network and i have a tnc and radio, how do
I connect to my father in CA?

Is it a simple command or do I have to login to a server and then startup an
application and then telnet to his local system and then go out the local rf
network?

In ROSE it is always a simple TNC connect command (ie a SABM with 2 digi
fields)

Let's K.I.S.S. since we don't have IP in every garage, if we want it or not.

tom

75. Re: [NETSIG:452] Re: Looking for inform

From: tmoulton@ram.net
Date: Sun, 11 Dec 94 21:38:39 EST
To: netsig@tapr.org
Message-ID: <05907.15021573@RAMail>
Rendered body type: text/plain

>
>> By proper usage of satellites we could have a very fast and responsive
>> network, but I think that we are going to have to put our $$ into this
>> need.
>
>> What do you all think??
>
>I think this is GREAT actually! There is a satellite (or system of them)
>called ACTS. I think NASA has something to do with the administration of
[deleted]
>the system. Anyhow, it operates at C band I believe, and with a satellite
>I think it could be possible for the amateur community to design such a
>satellite that acts like a 'mirror' instead of a flying PBBS. The entire
>passband of the satellite could be split up into different channels for
>different users. The satellite would 'reflect' the signals back down to
>Earth, where the receiving stations could 'tune' into which channel the
>transmitting station is sending to you on. A full duplex system could
>also be set up this way to provide 9600 bps, 19.2 Kbps, or 56Kbps two way
>links. Tere would not be any contention on the channel as each channel of
>the passband would be dedicated to a particular ground station.
>

Heck if we took the bandpass and split it up between 12 chunck and we had 12
earth stations then it could tx 100% of the time and listen to 6 of them and
have a pretty good mesh network.

>73
>Tim, AA5DF
>
>tim@nmsu.edu
>
>
tom, w2vy

76. Re: [NETSIG:435] Reality and a nationwide net

From: hank_oredson@MENTORG.COM (Hank Oredson)
Date: Mon, 12 Dec 94 10:25:58 PST
To: netsig@tapr.org
Message-ID: <9412121025.ZM1467@hanko>
Rendered body type: text/plain

On Dec 10, 7:59pm, Klarsen wrote:
> Subject: [NETSIG:435] Reality and a nationwide net
>
>   Seems about every 6 months or so someone has a "good idea" that
> will achieve a ham radio packet network across this nation and world-wide
> later. Knowing people talk about how netrom will not work with such a
> system and a better protocal (software) is required. I am one that has a
> professional life where this dream is a reality NOW!
>
>   From my office I can talk to almost anywhere in the world and do
> a data transfer in real time. The secret of my companies network? The
> Telephone Company. We pay a small fee and get instant communications. The
> system is seldom down and this is because they have multiple routes to
> Africa and around the world. They put up satellites so that more
> bandwidth exists to places like Hati where GI's have telephones that have
> built in answering systems. You may hear " SGT Thomas is not in his
> foxhole at this time. Please leave a message and I will get asap".

Hey! Me too! On at least two different networks! Wow!
(But what does this have to do with ham radio?)

>
>   This is today. We hams have no chance of competing with the
> communications giants of now. Where do we get the money to build and put
> up in orbit a great satellite? Unless we can sell bandwidth at a profit
> large compared with cost, it will not be possible. The micro-sat's were
> put up because people paying millions of dollars to put up their
> satellites were willing to allow hams to put the stuff on the second
> stage where it could not cause any real problems. This amounted to a gift
> from the people paying to the ham radio community.

True, just like below.

>
>   To be honest with ourselves, we must understand that ham radio
> can not even think about a national network, much less afford it. What
> are the BBS Sysops doing to get the mail and such around the nation? We
> are using the Internet, The Telephone Company and to a less and less
> extent every day a ham packet network.

Why can we not afford a national network? We have one now.
It works. It is not fast. It is not realtime.
Why are hams using the internet and the telephone company to
route messages? My answer is that they are lazy. It is MUCH
simpler to pay the money and hook up the phone than it is to
pay the money and construct our OWN network.

>
>   Some sobering facts from my knowlege of the situation:
>
>   1. For $700 one time cost and $40 per month I can get fidonet.na,
> about 4 meg of bulletins per day delivered to my computer from a
> satellite called Planet Connect. Any mail going back must be sent to TN
> by telephne modem.

For that same $700 you can put up a two port 9600 baud network node.
For two years of that $40 per month you can put up an HF PACTOR link.
Paying the money to the phone company does not create assets for
the ham radio network, but rather "removes* both the potential assets
(opportunity cost) and removes the pressure to *build* a network.

>   2. For $17.00 per month wb7tls in Tucson AZ gets 200 hours of
> time on the internet from his account glenng@indirect.com and he and I
> use this to ftp mail from/to each other and for general chit chat.

And for two years of that $17 per month he could put up a dual port
0600 baud network nodes.

>
>   3. I and Remi F6CNB have internet access given to us by our
> employer. We use this to ftp mail and like that.

I have the same access. I do *NOT* use it for ham radio. Doing so

would remove all incentives to build a better network.

>
>   4. There are 50 or more BBS hams forwarding to each other via the
> telephone. They are paying the pervailoing rates.

The two I have talked with claim their phone bill runs $125 - 150 per
month. For two years of this cost, they could put a full-up CLOVER
HF link on air, or build several dual port 9600 baud network nodes.
Paying the money to the phone company ... (see comments above).
>
>   5. I am part of the fidonet system that does cover the world. We
> can do what we do because we have software that sends out our mail during
> the cheap part of the night.

What does this have to do with ham radio?

>
>   So to summarize, we hams have not a chance to do better than we
> are now because we cannot afford our own network! We can work on local
> ham radio networks that lead to the home of hams willing to pay the
> telephone company what it asks to send your message across the country
> and the world.

Huh? We *choose* to pay other providers for the use of their comminications
facilities instead of building our own. Making this choice, and we *do*
seem to be making this choice, will not only stop future growth of the
ham radio network, but will lead to the destruction of the existing network.

We have several examples of this effect here in the PNW *now*.
Perhaps I'll write up the details and post them. Just ask me about the
southern / central Oregon problems ... the ham radio network suffered
a failure, and rather than fix the ham radio network, some folks decided
to use the telephone company instead. It now appears that the network
will never be repaired since "The telephone links work real well for us."

But what does this have to do with ham radio anyway? We can all put up
our own internet site, fido site, or direct link LL bbs, and will never
need a radio (or a hma license) at all.

I *thought* this group was here to help move forward the project of
creating and operating a ham radio network. Let's *do* that.

Just my observations and opinions ...

   ... Hank

--

Hank Oredson @ Mentor Graphics   Library Operations
Internet   : hank_oredson@mentorg.com   "Parts 'R Us!"
Amateur Radio: W0RLI@W0RLI.OR.USA.NOAM

77. Re: [NETSIG:439] proxim rf modems

From: hank_oredson@MENTORG.COM (Hank Oredson)
Date: Mon, 12 Dec 94 10:28:57 PST
To: netsig@tapr.org
Message-ID: <9412121028.ZM1472@hanko>
Rendered body type: text/plain

On Dec 10, 11:36pm, Fred Treasure wrote:
> Subject: [NETSIG:439] proxim rf modems
> KC5AEX and I finished up the a link built with proxim modems today.
> The thruput is impressive, about 1600 characters per second doing
> point-to-point FTP. The link we built is only about one-half mile
> but is not line-of-sight - there is a low hill between the two nodes.
> The line-of-sight range appears to be on the order of 3 to 5 miles with
> reasonable antennas, in our case a base station vertical and a small
> yagi. The total cost of the link was about $500 including the modems,
> 100' of 9913, two new antennas, and misc. parts. IMHO, pretty good
> performance for the price.
>-- End of excerpt from Fred Treasure

Tell us more! Details of what exact gear you used?
Any problems getting things running?

I have several links with similar RF situation (line of sight
4-8 miles, use small yagis and very low power at 9600 baud on 450)
that badly need upgrade to higher speed. The price sounds right ...

   ... Hank

--

Hank Oredson @ Mentor Graphics   Library Operations
Internet   : hank_oredson@mentorg.com   "Parts 'R Us!"
Amateur Radio: W0RLI@W0RLI.OR.USA.NOAM

78. 'RLI BBS with X1J 'PROMS

From: ESTEY@SKYLER.MAVD.HONEYWELL.COM
Date: Mon, 12 Dec 1994 13:31:40 -0600 (CST)
To: netsig@tapr.org
Cc: ESTEY@SKYLER.MAVD.HONEYWELL.COM
Message-ID: <941212133140.35400ae8@SKYLER.MAVD.HONEYWELL.COM>
Rendered body type: text/plain

At a radio club meeting last week, I made the statement that:
1. I would like my 'BPQ version 4.07 to do IP routing but had never
    really understood the 'BPQ IP router nor had been successful at getting
    it to work.
and that I liked ....
2. The ability to keep the packet switch going even if the BBS is down.

Then someone said, "well, that's simple. Instead of using the "KISS"
code in your TNC-supplied EPROMs he suggested using a X1J EPROM. He says
this will work fine with JNOS. My application is a little different:
DesqView running 4 copies of 17.x 'RLI BBSs and 'BPQ 4.07 with 6 ports.
So, will 'RLI run with the TNCs using X1J firmware?

A related question is has anyone got the BPQ router working well?

73
Carl

79. Re: [NETSIG:457] Re: Reality and a nationwide net

From: Tim Baggett <tim@nmsu.edu>
Date: Mon, 12 Dec 1994 12:44:52 -0700 (MST)
To: netsig@tapr.org
Cc: netsig@tapr.org
Message-ID: <Pine.3.87.9412121251.A23882-0100000@wilma>
Rendered body type: text/plain

On Mon, 12 Dec 1994, Hank Oredson wrote:

> Why are hams using the internet and the telephone company to
> route messages? My answer is that they are lazy. It is MUCH
> simpler to pay the money and hook up the phone than it is to
> pay the money and construct our OWN network.

I use the Internet and the phone company for wide area packet networking
simply because I like to talk real time to someone, ftp a file, or simply
send them a message that will arrive within a few hours and not days.

As for being lazy, try constantly running one of these Internet gateways.
Yeah sure there may be some out there that don't require much
maintenance, but as for me I'm CONSTANTLY working on something new. In
fact users get upset when I remove something that was working 'ok' just
to test something to improve things overall.

What's new with the NMSU Gateway? Well lets see:

Upgrade to Linux. This has been going on for months now. I've been
learning a lot about Unix in the process. Linux offers many advantages
for a gateway I wanted to take care of.

Writing Linux scripts to monitor the health of the gateway, and provide
some automatic sysoping.

Recoding some of the TNOS code so the commands are back the way I
personally prefer (I like 'n' to mean 'nodes' not 'name'). Yeah, this is
silly stuff, but it still takes work.

Working to improve the thruput of the 9600 bps connection here and

looking for better hardware possibilities (this AM we discussed the
feasibility of commercial frequency hopping SS - don't flame because it
is commercial, it works)

It could easily become a full time job.

> >   3. I and Remi F6CNB have internet access given to us by our
> > employer. We use this to ftp mail and like that.
>
> I have the same access. I do *NOT* use it for ham radio. Doing so
> would remove all incentives to build a better network.

Not hardly! You install an Internet gateway and get bombarded with 700+
users, you will soon discover that 9600 bps sucks. Last spring 9600 was
fine. Now, the channel is too crowded ALREADY, so we're looking into full
duplex, higher datarates, or whatever.

Now, to me, providing fast telephone network access has been an enormous
incentive to improve the local radio networks. In fact, I know of plans
for a 9600 node 60 miles away and the only purpose is to reach the gateway.

> Huh? We *choose* to pay other providers for the use of their comminications
> facilities instead of building our own. Making this choice, and we *do*
> seem to be making this choice, will not only stop future growth of the
> ham radio network, but will lead to the destruction of the existing network.

I'd like to be shown how the Internet access in southern NM has stopped
the growth. I think it actually started it (we're not all on 145.01 anymore!)

>
> I *thought* this group was here to help move forward the project of
> creating and operating a ham radio network. Let's *do* that.

I think so. I still stick to my goals of a realtime fully connected
network. Sorry, but the PBBS is only an application.

> Just my observations and opinions ...

Same here. Guess our observations differ from different parts of the country.

73
Tim, aa5df

80. Re: [NETSIG:457] Re: Reality and a nationwide net

From: Stu Mitchell <stu@lab.r1.fws.gov>
Date: Mon, 12 Dec 1994 20:19:25 +0000 (GMT)
To: netsig@tapr.org
Message-ID: <Pine.LNX.3.90.941212194458.11846B-100000@ash.lab.r1.fws.gov>
Rendered body type: text/plain

On Mon, 12 Dec 1994, Hank Oredson wrote:

> On Dec 10, 7:59pm, Klarsen wrote:
> > Subject: [NETSIG:435] Reality and a nationwide net
> >
> Huh? We *choose* to pay other providers for the use of their comminications
> facilities instead of building our own. Making this choice, and we *do*
> seem to be making this choice, will not only stop future growth of the
> ham radio network, but will lead to the destruction of the existing network.
>
> We have several examples of this effect here in the PNW *now*.
> Perhaps I'll write up the details and post them. Just ask me about the
> southern / central Oregon problems ... the ham radio network suffered
> a failure, and rather than fix the ham radio network, some folks decided
> to use the telephone company instead. It now appears that the network
> will never be repaired since "The telephone links work real well for us."

Being from Southern Oregon, I better put my two cents worth in. We *have*
to pay the telephone costs because we are geographically isolated from
other packet radio affectionados.(think South Hank) We also live in
mountainous terrain that makes the 'hidden transmitter' problem a pretty
tough one... To the north, political problems... frankly, we can't route
around the problem. We've tried, but the #EUG4-#KING4 link is marginal.

We also have a support issue. For example, I used to help service the
King Mountain node stack. It's a two hour ride from my house which means
that a simple fix takes at least 4-5 hours of time. Soda Mountain on
the south end of our county is an hour and half away... Then during the

winter, none of the sites are easily accessible because of the snow. The
trip to King requires a SnoCat and the trip to Soda requires a helicopter.

I view using telephones and internet as an alternative way to move
traffic. Interfacing with these various networks has been a real
eye opener because it points out the sore spots in the packet system. It is
slow and it isn't in real time... But it does have some utility. You
just have to use the right tool for the job.

I don't see using these systems as a detrement at all. In fact,
techniques learned by experimenting with both internet and telephone
forwarding have been applied in the packet network. [Trunking, repeaters,
etc.] People who use these methods had to learn them somewhere....

> But what does this have to do with ham radio anyway? We can all put up
> our own internet site, fido site, or direct link LL bbs, and will never
> need a radio (or a hma license) at all.
>
> I *thought* this group was here to help move forward the project of
> creating and operating a ham radio network. Let's *do* that.

It is... in fact, I think Hank should add one more item to his list of
reasons the system will fail. People. Any time you start throwing stones
instead of concentrating on the why or how, the fun goes away.... and
when the fun goes away, so does the enthusiasm.

[BTW, Hank, if you would like to pass along your specific observations
and solutions about the weak spots in So. Oregon, please feel free. I've
had to curtail my involvement with SOAPRA because I've got kids now (!),
but I'll make sure your comments get passed along to the appropriate
people.]

> Just my observations and opinions ...
>
>   ... Hank

Stu Mitchell   stu@lab.r1.fws.gov
USFWS Forensic Lab   wd4eck@wb7awl
Ashland, Oregon   *** Follow Me! ***

81. Re: [NETSIG:459] 'RLI BBS with X1J 'PROMS

From: hank_oredson@MENTORG.COM (Hank Oredson)
Date: Mon, 12 Dec 94 12:50:38 PST
To: netsig@tapr.org
Message-ID: <9412121250.ZM1494@hanko>
Rendered body type: text/plain

On Dec 12, 1:34pm, ESTEY@SKYLER.MAVD.HONEYWELL.COM wrote:
> Subject: [NETSIG:459] 'RLI BBS with X1J 'PROMS
> At a radio club meeting last week, I made the statement that:
> 1. I would like my 'BPQ version 4.07 to do IP routing but had never
>   really understood the 'BPQ IP router nor had been successful at getting
>   it to work.
> and that I liked ....
> 2. The ability to keep the packet switch going even if the BBS is down.
>
> Then someone said, "well, that's simple. Instead of using the "KISS"
> code in your TNC-supplied EPROMs he suggested using a X1J EPROM. He says
> this will work fine with JNOS. My application is a little different:
> DesqView running 4 copies of 17.x 'RLI BBSs and 'BPQ 4.07 with 6 ports.
> So, will 'RLI run with the TNCs using X1J firmware?

Sure, just run bpq on the computer and have it talk to the
tncs on the interconnect between them. i.e. the bpq running on
the computer is "just another KISS link on the interconnect".

An even better solution (IMHO) is to run bpq on a data engine,
let that handle all the networking / routing, and let the computer
handle all the applications via multi-drop KISS link to the DE.
This solution may or may not work ... suspect that John has not
provided quite the right interface from the computer to the
serial port of the DE so that the DE can talk to a few tncs plus
the other copy of BPQ running on the computer.

The third solution, and (IMHO) the best one is to run an old
junker 386 as your switch, and hang it on a UPS that gets power
from the same battery bank that backs your radios.

This way you don't lose the applications OR the network when
the power goes away. You can run any (or multiple) switch software
on the 386 ... and not be limited by the capabilities of the
TheNet proms.

Speaking of those limitations of TheNet - the fact that a multi-port
switch does not share a single node/link/route table seems to me
the main disadvantage of using anything other than KISS in the
tnc itself. It's too bad the folks who designed NET/ROM didn't
do the inter-tnc communication a little differently, and allow a
node stack to share a single (distributed) routing table.

   ... Hank

>
> A related question is has anyone got the BPQ router working well?

Or even "... got the BPQ router working at all ..."

The only time it has been tried on our network, it tended to stay
up for about 90 minutes max ...

   ... Hank

--

Hank Oredson @ Mentor Graphics   Library Operations
Internet   : hank_oredson@mentorg.com   "Parts 'R Us!"
Amateur Radio: W0RLI@W0RLI.OR.USA.NOAM

82. Re: [NETSIG:461] Re: Reality and a nationwide net

From: hank_oredson@MENTORG.COM (Hank Oredson)
Date: Mon, 12 Dec 94 13:13:28 PST
To: netsig@tapr.org
Message-ID: <9412121313.ZM1499@hanko>
Rendered body type: text/plain

On Dec 12, 2:24pm, Stu Mitchell wrote:
> Subject: [NETSIG:461] Re: Reality and a nationwide net
> On Mon, 12 Dec 1994, Hank Oredson wrote:
>
> > On Dec 10, 7:59pm, Klarsen wrote:
> > > Subject: [NETSIG:435] Reality and a nationwide net
> > >
> > Huh? We *choose* to pay other providers for the use of their
comminications
> > facilities instead of building our own. Making this choice, and we *do*
> > seem to be making this choice, will not only stop future growth of the
> > ham radio network, but will lead to the destruction of the existing
network.
> >
> > We have several examples of this effect here in the PNW *now*.
> > Perhaps I'll write up the details and post them. Just ask me about the
> > southern / central Oregon problems ... the ham radio network suffered
> > a failure, and rather than fix the ham radio network, some folks decided
> > to use the telephone company instead. It now appears that the network
> > will never be repaired since "The telephone links work real well for us."
>
> Being from Southern Oregon, I better put my two cents worth in. We *have*
> to pay the telephone costs because we are geographically isolated from
> other packet radio affectionados.(think South Hank) We also live in
> mountainous terrain that makes the 'hidden transmitter' problem a pretty
> tough one... To the north, political problems... frankly, we can't route
> around the problem. We've tried, but the #EUG4-#KING4 link is marginal.

My point was simply a financial one - money spent on telephone links
is money *not* spent on ham radio links. This is only one of the problems
in the southern Oregon network. I suspect that the application of around
$1000 (less than one years telephone bill) would give a totally reliable
9600 baud link from Southern Oregon to Northern Oregon.

However, between you and me (i.e. from KING on north) there is no real
reason to do anything. Why? Because the message do indeed get through:
from Southern Oregon to Seattle via Ma Bell, and then back south via
Olympia/Portland/Salem/Eugene.

> We also have a support issue. For example, I used to help service the
> King Mountain node stack. It's a two hour ride from my house which means

> that a simple fix takes at least 4-5 hours of time. Soda Mountain on
> the south end of our county is an hour and half away... Then during the
> winter, none of the sites are easily accessible because of the snow. The
> trip to King requires a SnoCat and the trip to Soda requires a helicopter.

Perhaps there is some bad network design ... We had a similar problem
when all the Portland area nodes were way up there in the snow. Got
rid of most of them, and built the network using sites that can be
easily reached all year long - mostly in peoples houses. Now things
stay on air, or can be quickly fixed. Yes, we need MORE nodes, but that
allows us to service MORE users.

> I view using telephones and internet as an alternative way to move
> traffic. Interfacing with these various networks has been a real
> eye opener because it points out the sore spots in the packet system. It is
> slow and it isn't in real time... But it does have some utility. You
> just have to use the right tool for the job.

If the goal is "to move traffic" then LL, US Mail (remember the old
"send me a disk with all your bulletins, and I'll send you one with mine")
all work if the goal is "to move traffic". If the goal is "to create
a network" then using commercial communications facilities probably is
very counter productive (except in New Mexico).

> > I *thought* this group was here to help move forward the project of
> > creating and operating a ham radio network. Let's *do* that.
>
> It is... in fact, I think Hank should add one more item to his list of
> reasons the system will fail. People. Any time you start throwing stones
> instead of concentrating on the why or how, the fun goes away.... and
> when the fun goes away, so does the enthusiasm.

Who's throwing stones? I am making a suggestion that we should
avoid commercial communications facilities, and *build* more network.

> [BTW, Hank, if you would like to pass along your specific observations
> and solutions about the weak spots in So. Oregon, please feel free. I've
> had to curtail my involvement with SOAPRA because I've got kids now (!),
> but I'll make sure your comments get passed along to the appropriate
> people.]

The appropriate people have seen them and commented on them ...
The discussion on how to create a better network in the PNW
continues daily over our packet network, and each evening about
10 PM on the Roundtable network.

There is one minor problem though ... the general response from folks
"way south" is that "The telephone links work well for us, so we don't
really need a long-haul network" Which is exactly what I'm suggesting
is one of the problems with potential future growth of the network.

i.e. the urgency is not there. "We can fix things next summer,
because the traffic will continue to get through over the telephone."

   ... Hank

--

Hank Oredson @ Mentor Graphics   Library Operations
Internet   : hank_oredson@mentorg.com   "Parts 'R Us!"
Amateur Radio: W0RLI@W0RLI.OR.USA.NOAM

83. Re: ROSE Experiment and oth

From: imotion@iu.net (Howard Goldstein)
Date: Mon, 12 Dec 1994 16:55:56 -0500
To: netsig@tapr.org
Message-ID: <199412122202.RAA26656@bb.iu.net>
Rendered body type: text/plain

WCHAST@delphi.com writes:

>>I know that Tom was talking about the interface for ROSE being similar to
>>X1J in the future, what exactly?
>
>Tom is working on a NetRom like user interface, i.e. you connect to the
>switch like you connect to a NetRom device and then you issue connects

>through the network. This is for node hoppers and others who have a
>psycological need to connect to something before they connect to their
>correspondent.
>

Connect-first is more than an affectation. Digis cause most TNCs to scale
T1. The new interface will have the salutary effect of alleviating the need
to continually drop one's FRACK value when calling through ROSE.

Some of your fellow Floridians need more than one try to hit their network
access point :(

Howie N2WX   imotion@iu.net

84. Re: [NETSIG:457] Re: Reality and a nationwide net

From: ron@chaos.eng.wayne.edu (Ron Atkinson)
Date: Mon, 12 Dec 1994 17:01:19 -0500 (EST)
To: netsig@tapr.org
Message-ID: <9412122201.AA23050@chaos.NIS.chaos>
Rendered body type: text/plain

My mailer said Hank Oredson said this:
>
> Why can we not afford a national network? We have one now.
> It works. It is not fast. It is not realtime.
> Why are hams using the internet and the telephone company to
> route messages? My answer is that they are lazy. It is MUCH
> simpler to pay the money and hook up the phone than it is to
> pay the money and construct our OWN network.

Of course it's very obvious that many use the Internet and telephone
company because we dont' have a fast realtime network. There are a bunch
of applications called BBS's that slowly exchange mail, but not network
nodes. There is a big difference between what I and many others call a
network and the BBS's that many seem to think *are* the network. I
can't exactly pass my IP frames through a BBS to reach a destination.

I'm one of those people that run an Internet gateway and my reasons are
different from many. I dont' pass AX.25 BBS mail for several reasons..

     We should try to use packet as much as possible.

     The BBS's in town already have HF links, do landline forwarding, etc...
     (basically they already have enough connectivity and don't need ours)

     They have a proven history of causing packet wars around here and
     the general attitude is 'want want want!!!'   You give them a
     little bandwidth and they will try to shove everything through
     it clogging everything up.

     AX.25 BBS mail is some of the most useless crap I've ever seen and
     it got so bad the past couple years that I dont' even use or
     connect to them anymore. They can do nothing for me or the majority
     of the TCP/IP network in SE Michigan, that's the reason why we've
     been vacating them.

This last one is actually a problem with the ole' user education, and
many will say that I shoudl educate people. Well I have for many years
and it took up so much time that I wasn't able to get anything done
anymore. I had to give it up to go onto 'bigger a better things' and
actually get things done.

What goes through the gateway then??? We experiment with TCP/IP protocols
and we provide an extension of the Internet over ham radio. You hav/e to
remember, this is computer experimenters here and out of coincidence
we just happen to be ham radio operators too. We also just happen to be
using ham radio too to do this because that's what this is all about,
experimenting and having fun. Ham radio is my second hobby, computer
experimenting is my first.   The primary data that passes through the gateway
is Ham Radio discussion groups and other related items. You know, the usual
message that are posted on the Internet and are passed onto packet, like
AMSAT messages that are originated on the Internet (how do you think
a lot of those AX.25 BBS AMSAT messages get on packet? Via gateways). We
also pass netsig, tcp-group, nos-bbs, solar reports, etc...   This is a
wealth of information that is not available via our so-called existing
network.

As you can see I provide a *gateway* between two services, not a

gateway to just pass BBS mail around the world. It originally went
in to link small islands of LAN's, but the majority of traffic that
I see from other parts of the world is usually someone just pinging my
home system or a visitor just lurking around to see what we have.

Now on what a system does to improve things, well we're the folks that
brought the world-wide convers network into Michigan, part of Ontario
Canada, and Northeast Ohio. When we put the gateway in people flocked
from all around trying to connect to it. This usually leads onto better
links that wouldn't have gone in previously. If we get enough of these
links in then we'll have our connectivity, but for now something like
AX.25 BBS mail, exploring a cryptic NETROM alias name trying to figure
out where the next node is by it's name, trying to digipeat across half
the country to connect to someone only to get stuck on his TNC PBBS
since you dont' know which SSID is his actual keyboard, etc.... just
isn't enough to want to motivate someone to put up a network. Provide
some killer applications and give them something *real* to use and
exciting (like what's currently available on the Internet) and people
will start talking about how to improve things.

I still want a nationwide network (not a nation of applications like BBS's
that can't pass 'Joe ham sitting at home's data transparently in
real or near-realtime) over packet, and I'm still doing my part to
help improve things when I can, but the fact is that we don't have a
real *network* right now.

> Just my observations and opinions ...

ditto

>   ... Hank

--

Ron Atkinson N8FOW

AMPRnet : n8fow@n8fow.ampr.org
Internet : ron@chaos.eng.wayne.edu
           aa011@detroit.freenet.org

85. Spread Spectrum Radios

From: "Rick Whiting" <Rick_Whiting@ATK.COM>
Date: 12 Dec 1994 17:05:49 -0600
To: "Post Netsig TAPR" <netsig@tapr.org>
Message-ID: <199412122302.RAA08146@ATK.COM>
Rendered body type: text/plain

Subject: Time:5:00 PM
  OFFICE MEMO   Spread Spectrum Radios   Date:12/12/94
SPREAD SPECTRUM RADIOS

Cylink, Proxim, FCC Part 15, etc.
Compiled by W0TN
Rev. 1, 12-12-94

Cylink

In article <9411092031.AA04204@cacfs.ks.erg.sri.com>
rush@sparkyfs.erg.sri.com (David Rush) writes:

> Cylink sells a few RF modems for 902-928 MHz that fall under the spread-
> spectrum no-license rules. They've run units as much as 30 miles under
> ideal conditions (between mountain-top sites, big antennas, LOS).
> They have 64 kbps, 128 kbps, and 256 kbps units. I've used the 128 kbps
> units for mobile VTC.
> You simply plug in your antenna (units come with rubber ducks!), the
> power supply, and your data (EIA-530/RS-449 or V.35, as I recall),
> and go.
>
> Try them at 708-377-7300 (I think that's the Chicago area office).
>
> David

FREEWAVE

Date: 11 Dec 1994 05:59:10 GMT
From: Jonathan Sawyer <76360.3417@CompuServe.COM>
Subject: Spread Spectrum

Check out Freewave Technologies SS Modem. They are a lot less
expensive than Cylink modems and maintain a 115.2 KB throughput.
In fact I am writing this on my office computer from my home
computer 22 miles away using a FreeWave modem. FreeWave is in
Boulder Co. Their number is 303-444-3862

PROXIM

> On page 19 of November's "Circuit Cellar INK", there is an add for
> Timeline selling Proxim spread-spectrum RF modems for $99. It says:
>
>   The Proxlink is a small communication device that replaces the
>   use of an RS-232 cable hook-up with wireless (Radio Frequency)
>   technology. Each module combines the functions of an RS-232
>   compatible modem (or any other RS-232 device) and a
>   transmitter/ receiver operating in the 902-928 MHz band. Indoor
>   range of 500 feet possible using standard 1/4 wave antenna.
>   Units support data rate to 19.2 KBaud (full duplex) and use
>   multiple channels to allow for non-interfering overlapping
>   systems. Message format is 8 data bits, no parity, and 1 stop
>   bit. Each unit requires a 5VDC supply at a maximum of 230 mA. A
>   wide variety of configurations can be accomodated with
>   parameters stored in non-volatile memory (EEPROM).
>   Configuration changes are supported by menu-driven, on-board
>   software. Installation schematics and application details are
>   available. Original cost of these units is around $600.
>
> These are Part-15 equipment. I wonder if these units are illegal for
> use in Amateur service because they don't use one of the few spreading
> sequences that the FCC has approved for amateur use. That's the case
> with most commercial spread-spectrum equipment that I've heard of.
>
> If you want to call Timeline to pursue this, their technical information
> phone number is 310-784-5488. Of course I don't have anything to do with
> Timeline, I simply thought you might be interested in this equipment.
>
>   Thanks
>
>   Bruce Perens

We bought some of these to play with at work. Haven't had a chance to play
with them yet, but some things ought to be clarified:
 - The serial link is TTL. A schematic is included showing how to build
   an RS-232 converter using a MAX-232.
 - No enclosure, no antenna. Funny little antenna jack.

As for amateur radio use: don't put too big of an antenna or add a power
amplifier. Then you would not be using it in the amateur radio service,
and suddenly the DS coding is legal. This radio would be real tempting to
mount on the tower. An example in the manual shows a pair of them connected
via serial ports back-to-back as a repeater. They even have a maintenance
protocol for reconfiguring the remote radio(s).

One day I hope to find time to apply power to mine.

73, David N4HHE
dkelly@nebula.tbe.com

The Timeline Proxim SS modems are the OEM version of the ones I was carting
around and playing with at the ARRL DCC this last August. OEM in this
case means no case, antenna or apparent RS-232 conversions.

Range with a 1/4 antenna covered most of the motel. I'd guess that to be
about
500 feet as advertised. Throughput was between 1200-1600 bytes a second.
This was with SLIP links operating both units in broadcast mode.

Interestingly enough, while the serial rate is limited to 19.2kbaud, the
radio data rate is between 161-262 kbaud. I called proxim to see if
they would release the source (yeah right, but hey?) to see if I could
bump the UART serial rate up, but that they didn't seem to want to. The
processor in them I seem to recall is a 6502.

I'm told by a fellow who makes SS his business that the Proxims are
poor performers compared to some other units, but for $99 it certainly
is tempting.

Timeline claims they are shipping schematics with them. Anyone confirm this?

Jeff

SMTP   - wb8wka@wb8wka.ampr.org [44.102.16.16] | Operating
Internet - wb8wka@merit.edu , jking@merit.edu | on the edge
AX25   - wb8wka@wu8c.#SEMI.MI.USA.NOAM | of Chaos

> Timeline claims they are shipping schematics with them. Anyone confirm
this?

hi hi hi hi. Not by my yardstick. The manuals are pretty good, but one
manual is for the "finished product" and the other is part of the OEM
configuration software stuff. Tells you how to remove "Proxim" from the
setup screen and replace it with your name, etc.

What passes for schematics is (4) 8.5"x11" xeroxes of the 4 quadrants of
a C sized schematic. Don't have it in front of me, but as I recall all that
was useful (well, maybe useful) was the hand drawn additions showing how
to add a Maxim 232 (or 233?) RS-232 driver.

Jeff King mentioned that he thought Proxim was using a 6502, and that is
true. Never saw a 65C02 in PLCC before. Probably never again. And it wasn't
even a special hi-integration microcontroller version of the 65C02. Couldn't
tell what UART was used, guess it got integrated into one of the special
chips.

73, David N4HHE
dkelly@nebula.tbe.com <<-- use this address

I have a couple of the proxim rf modems working. The schematic that is
provided with the modems uses a MAX238 chip to convert the 5 volt signals
to RS232 levels. Unfortunately, that is not a common chip. I used the
readily available MAX232 and only wired the TX and RX data lines. That is
enough to get it working. The framing character is programmable. I set it
to 192 and KISS works like a charm. I got ftp speeds of 500 cps with JNOS
for Linux talking to an old slow laptop. I'm curious to see what kind of
range the units have. They work short distances with a 4 inch piece of
wire-wrap tacked to the back side of the SMA socket.

The antenna connector is listed as BFA in one place and SMA in another.
I plan to run a short piece of 50 ohm coax from the back of the connector
(what ever it is) to a type N mounted on the metal box I'm putting the
modem in.

KC5AEX and I finished up the a link built with proxim modems today.
The thruput is impressive, about 1600 characters per second doing
point-to-point FTP. The link we built is only about one-half mile
but is not line-of-sight - there is a low hill between the two nodes.
The line-of-sight range appears to be on the order of 3 to 5 miles with
reasonable antennas, in our case a base station vertical and a small
yagi. The total cost of the link was about $500 including the modems,
100' of 9913, two new antennas, and misc. parts. IMHO, pretty good
performance for the price.

Licensing Considerations

Bruce Perens said... [re Proxim]

>> These are Part-15 equipment. I wonder if these units are illegal for
>> use in Amateur service because they don't use one of the few spreading
>> sequences that the FCC has approved for amateur use. That's the case
>> with most commercial spread-spectrum equipment that I've heard of.

Then David N4HHE said...

>As for amateur radio use: don't put too big of an antenna or add a power
>amplifier. Then you would not be using it in the amateur radio service,

>and suddenly the DS coding is legal. This radio would be real tempting to
>mount on the tower. An example in the manual shows a pair of them connected
>via serial ports back-to-back as a repeater. They even have a maintenance
>protocol for reconfiguring the remote radio(s).

For which I reply...

This is taken from the 7th Annual One Day Seminar on Spread Spectrum presented by the Vehicular Technology Society of the IEEE, dated June 22, 1993. From a talk given by Graham Barnes, Director of Marketing and Sales, Western Multiplex.

"The regulatory basis of Part 15 spread spectrum links is provided by the FCC Rule Part 15.247.

..

Transmitters operating under Part 15.247 may intentionally radiate only in the ISM (Industrial, Scientific and Medical) band and may only use frequency hopping or direct sequence techniques. No other spreading techniques are permitted. There are three microwave frequency bands allocated to this service:

902 - 928 MHz (26 MHz bandwidth)
2400 - 2483.5 MHz (83.5 MHz bandwidth)
5725 - 5850 MHz (125 MHz bandwidth)

..maximum transmitter EIRP which is limited to +6dBW (1 watt into a 6dBi gain antenna). However, users may take advantage of transition provisions under which the EIRP limit is modified to a 1 W RF output power into any antenna. Products that are certified by June 23, 1992 and manufactured up until June 23, 1994 fall under the transition provisions and equipment users with these products can operate at this power level indefinitely."

As for the Amateur Radio Service read up on section 97.311 for SS techniques. In this section it describes frequency hopping and direct sequence regulations. Under DS there are three allowed spreading codes. Needless to say, the part 15 devices that are being sold are not likely to be using one of these three spreading codes. Thus it is better to operate these devices under the part 15 provision.

Steve, N7HPR

srbible@cs.nps.navy.mil
Naval Postgraduate School, Monterey, CA 9394

---

86. [NETSIG:406] Re: Looking for information

From: genie-postmaster@geis.com
Date: Thu, 8 Dec 94 22:34:00 UTC
To: netsig@tapr.org
Message-ID: <199412130119.AA246291566@relay2.geis.com>
Rendered body type: text/plain

Original Msg Id: Not Found
genie-postmaster response to your message

Subject: [NETSIG:406] Re: Looking for information
System: QUIK-COMM
Date: Thu 8-Dec-94 22:34

Status: 5 Message picked up by receiving system and
delivered to all recipients with NO exceptions.

---

87. Re: [NETSIG:455] Re: Looking for information.

From: Barry McLarnon VE3JF <bm@hydra.carleton.ca>
Date: Mon, 12 Dec 1994 23:47:07 -0500 (EST)
To: netsig@tapr.org
Message-ID: <199412130447.XAA20262@hydra.carleton.ca>
Rendered body type: text/plain

Quoth w2vy:

> If traditional you mean a Transparent ax.25 routing device like is in a tnc

> then i wonder why not. If each station were to digi arp frames via W2VY-2
> then all stations would see the apr info and the ax.25 path to access the
> systems.

Ok... but this is a kludge. The purpose of ARP is to provide a mapping
between physical addresses (callsigns in this case) and IP addresses, not
to do routing.

> >No, the facts of life are these: nobody will be barred access simply because
> >they choose not to run IP. Just as a user with a dumb terminal and a modem
> >can dial up a server and access his mail, news, browse the Internet, etc, so
> >can an AX.25 packet user connect to a gateway (NOS or Unix box) and obtain
> >similar services on the rf network. But most users will *want* to run IP,
> >in order to get the most out of all the nifty new IP-based applications.
> >And it is getting easier and easier to do so. Most new OS's for personal
> >computers are including support for TCP/IP, so IP is likely to be lurking
> >in your system whether you like it or not. Using all of the IP applications
> >on AX.25 rf networks is not as easy as it could be yet, but it's getting
> >there.
>
> But if the backbone is based upon IP there will be regions of the country
> where a backbone runs, but people will need to have their data travel many
> miles to get to one of those Gateway system.
>
> Whereas if the backbone were one that provided support for *all* ax.25 uses
> at every point then this would not be a problem.

By definition, a backbone is not for user access anyway. :-) Yes, some
minimal ax.25 facilities might be needed for such users to cover a few
hops to a gateway. You don't need a wide area network to do that job,
though... the accent should be on 'minimal'.

> [stuff deleted]
> >My point exactly. IP does not fit the OSI model... it is sometimes referred
> >to as a Level 3.5 protocol, since it largely deals with internetworking
> >issues. These issues were largely ignored by the folks who brought us X.25,
> >whose telephone company mindset led them to envision large networks with
> >uniform protocols, controlled by a small number of major players (the PTTs
> >or equivalent)... in other words, the very antithesis of the amateur
> >packet network! IP needs a little help at the subnet end of Level 3,
> >which is basically a local or regional issue. It doesn't need a full-blown
> >Level 3 protocol, with all of its complexities, incompatible addressing
> >scheme, etc, sitting underneath it to provide that help... that would be
> >tremendous overkill. In fact, I think the job can be done simply by
> >adapting existing IP routing protocols and using well-designed rf network
> >topologies.
>
> Here is where we disagree.
>
> My view of TCP/IP is a User Application that communicates from User PC to
> User PC. Not a Network.

Your view seems a little distorted. TCP/IP is a protocol stack, not an
application. The neat thing about it is that the protocol engine is
freely available, and you can drop it in your PC (or Mac, etc) and have
instant access to many wondrous applications... and you *are* part of the
network. This isn't fundamentally different from ROSE, but in ROSE the
protocol engine resides in a dedicated piece of hardware, the tnc. I'd
rather have it in my PC, where I can do more with it.

> If we have your fully connected ip network and i have a tnc and radio, how do
> I connect to my father in CA?

For starters, I bet he'll soon be running TCP/IP. :-) He'll be running it
because it was readily available (probably came with his computer), easy
to set up (note that I'm not necessarily talking about NOS here... and
there's still lots of room for improvement in this area... but it will come),
and he'll be missing out on a lot of the most interesting packet applications
if he doesn't.

> Is it a simple command or do I have to login to a server and then startup an
> application and then telnet to his local system and then go out the local rf
> network?

Gee, you make it sound tough. Can I at least assume that you have a
computer? :-) You could take the easy way out and run TCP/IP, and have
some fun with it... or you could write a little script for your favorite
terminal emulation program which automates making the connection through the
gateways.

> In ROSE it is always a simple TNC connect command (ie a SABM with 2 digi
> fields)
>
> Let's K.I.S.S. since we don't have IP in every garage, if we want it or not.

You seem to be suggesting that the network be designed to facilitate the
most mundane of applications: keyboard-to-keyboard chat between two users
running the equivalent of dumb terminals. That's just not where it's at
anymore.

Barry

--
  Barry McLarnon VE3JF/VA3TCP | Internet: bm@hydra.carleton.ca
  Ottawa Amateur Radio Club | AMPRnet: barry@va3tcp.ampr.org
  Packet Working Group | FreeNet: aa187@freenet.carleton.ca

88. Re: [NETSIG:468] Re: Looking for information.

From: tmoulton@ram.net
Date: Tue, 13 Dec 94 06:48:17 EST
To: netsig@tapr.org
Message-ID: <05919.15021573@RAMail>
Rendered body type: text/plain

>
>Ok... but this is a kludge. The purpose of ARP is to provide a mapping
>between physical addresses (callsigns in this case) and IP addresses, not
>to do routing.
>

It might provide a much more managable solution than we have right now.

>By definition, a backbone is not for user access anyway. :-) Yes, some
>minimal ax.25 facilities might be needed for such users to cover a few
>hops to a gateway. You don't need a wide area network to do that job,
>though... the accent should be on 'minimal'.
>

Yes, but if I needed my data to be routed into an IP box to get onto the
backbone it is very likely that it would have to travel far in many regions.

>> Here is where we disagree.
>>
>> My view of TCP/IP is a User Application that communicates from User PC to
>> User PC. Not a Network.
>
>Your view seems a little distorted. TCP/IP is a protocol stack, not an
>application. The neat thing about it is that the protocol engine is
>freely available, and you can drop it in your PC (or Mac, etc) and have
>instant access to many wondrous applications... and you *are* part of the
>network. This isn't fundamentally different from ROSE, but in ROSE the
>protocol engine resides in a dedicated piece of hardware, the tnc. I'd
>rather have it in my PC, where I can do more with it.
>

It is interesting that every time TCP/IP is mentioned the concept of
'wondrous applications' pops up.

The primary feature of a backbone should be Communication.

>> If we have your fully connected ip network and i have a tnc and
radio, how > do
>> I connect to my father in CA?
>
>For starters, I bet he'll soon be running TCP/IP. :-) He'll be running it

Here's a shock - I'm not running TCP/IP ! I am one of the Millions of the
unwashed.

>because it was readily available (probably came with his computer), easy
>to set up (note that I'm not necessarily talking about NOS here... and
>there's still lots of room for improvement in this area... but it will come)
>and he'll be missing out on a lot of the most interesting packet application

I love it! Now we're telling my dad what applications HE Wants! Maybe He and
I don't mind missing these applications.

>if he doesn't.

>
>> Is it a simple command or do I have to login to a server and then startup
>an
>> application and then telnet to his local system and then go out the local
>rf
>> network?
>
>Gee, you make it sound tough. Can I at least assume that you have a
>computer? :-) You could take the easy way out and run TCP/IP, and have
>some fun with it... or you could write a little script for your favorite
>terminal emulation program which automates making the connection through the
>gateways.
>
>> In ROSE it is always a simple TNC connect command (ie a SABM with 2 digi
>> fields)
>>
>> Let's K.I.S.S. since we don't have IP in every garage, if we want it or no
>t.
>
>You seem to be suggesting that the network be designed to facilitate the
>most mundane of applications: keyboard-to-keyboard chat between two users
>running the equivalent of dumb terminals. That's just not where it's at
>anymore.

So we should exclude people who can/don't want to run TCP/IP.
>
>Barry
>
>--
> Barry McLarnon VE3JF/VA3TCP | Internet: bm@hydra.carleton.ca
> Ottawa Amateur Radio Club | AMPRnet: barry@va3tcp.ampr.org
> Packet Working Group | FreeNet: aa187@freenet.carleton.ca

89. Advancing the state of the networks

From: tmoulton@ram.net
Date: Tue, 13 Dec 94 06:56:21 EST
To: netsig@tapr.org (netsig (tapr))
Message-ID: <05920.15021573@RAMail>
Rendered body type: text/plain

If you are not part of A solution then you are part of THE problem.

I am interested in helping people learn about ROSE.

I have not gotten many replies as to if my TXUI application will help TCP/IP
Users. I did ask phil, ka9q and the features I want to add will work as
I understand it.

Jack, N4ULS, I hope you got enough information for your group to make a
decision.

For ten years I have wanted to get the Golden Packet Award, and still do.

All we have to do is build a nation wide network, let's get started!

I am happy to continue any discussions here or direct email.

73, tom
w2vy@ram.net

90. Re: [NETSIG:468] Re: Looking for information.

From: janderson@ram.net
Date: Tue, 13 Dec 94 09:43:03 EST
To: netsig@tapr.org
Message-ID: <01883.15021591@RAMail>
Rendered body type: text/plain

>You seem to be suggesting that the network be designed to facilitate the
>most mundane of applications: keyboard-to-keyboard chat between two users
>running the equivalent of dumb terminals. That's just not where it's at
>anymore.
>
>Barry

But, any network, no matter how advanced, should always support the simplest
hardware configuration. This is necessary for some of the most basic "work"
we do as hams. I don't want a network that locks out the "keyboard to
keyboard chat between two users running...dumb terminals". I don't want a
network that will make it impossible for the user with a Model 100/TNC/radio

portable packet station to respond to the local hospital during a drill or an actual emergency and set up a packet link to the county EOC. To me, that's one of the real neat things about packet. If I feel like it, I can connect my small TNC to an HP calculator and have a fully functional packet station, provided I have a convenient entry point into the network.

TCP/IP has tremendous potential and will bring a lot of "nifty" applications to the packet users. But let's not lock out the basic users in the process. Let's not force them to find some local TCP/IP system running a gateway just so they can get into the network. The TNC-Radio Node/Switch, regardless of the networking technology used, is easy to build, easy to place at a typical radio site, and easy to equip with standby power that can run the system for days or even weeks. During a real emergency, do we want to rely on complicated gateways running on PC's, many of which will rely on commercial power for their operation? Do we want to rely on the users operating these gateways, who may become bored, fed up, divorced, relocated, etc., thereby changing the topography of the network, sometimes with little or no warning?

What I need is a network that meets the requirements of the TCP/IP users AND the basic, "dumb terminal" users. From what I've see so far, a full blown dedicated TCP/IP network falls short of this need, since the user must either run a full blown TCP/IP station or be close enough to a gateway to get access. And who knows how he establishes a "keyboard to keyboard" session to his buddy with a dumb terminal on the other side of town once he finds a gateway he can use.

I think the answer might be some combination of a bit regenerator high-speed packet repeater linked to a node/switch. All users within range of the repeater hear each other without causing hidden transmitter problems. The bit regenerator is a dumb device, it just retransmits whatever it hears on the input. This is great for TCP/IP and "other" users. The stations within range of the bit regen repeater become a "lan". No NET/ROM, ROSE or KA-NODES would be needed (or wanted) on the repeater.

Attached to the repeater, and monitoring, would be a node or switch linking it to a wide area backbone, with other bit regen repeaters serving other LANS. So, if a user needs to establish a link outside of the LAN, they issue the appropriate command to the node/switch via the repeater. The node/switch establishes the connection to the other end. If the appropriate networking technology is used, "connections" by "basic" users, and TCP/IP frames could both be supported.

Food for thought...

91. Re: [NETSIG:457] Re: Reality and a nationwide net

From: Klarsen <k5di@acca.nmsu.edu>
Date: Tue, 13 Dec 1994 11:11:48 -0700 (MST)
To: netsig@tapr.org
Message-ID: <Pine.SUN.3.91.941213103843.3608A-100000@kazak>
Rendered body type: text/plain

On Mon, 12 Dec 1994, Hank Oredson wrote:

> On Dec 10, 7:59pm, Klarsen wrote:
> > Subject: [NETSIG:435] Reality and a nationwide net
> >
> >   Seems about every 6 months or so someone has a "good idea" that
> > will achieve a ham radio packet network across this nation and world-wide
>
> Hey! Me too! On at least two different networks! Wow!
> (But what does this have to do with ham radio?)

        It has to do with what we consider as practical for a national network. Those you have exist. Care to guess what they cost to construct?

>
> For that same $700 you can put up a two port 9600 baud network node.
> For two years of that $40 per month you can put up an HF PACTOR link.
> Paying the money to the phone company does not create assets for
> the ham radio network, but rather "removes* both the potential assets
> (opportunity cost) and removes the pressure to *build* a network.

        The problem Hank is that you are assuming a ham can save money for 2 years. My wife will find it and have a much better use for it. And the satellite system saves money spent otherwise with the telephone company.

>

>
> >   2. For $17.00 per month wb7tls in Tucson AZ gets 200 hours of
> > time on the internet from his account glennng@indirect.com and he and I
> > use this to ftp mail from/to each other and for general chit chat.
>
> And for two years of that $17 per month he could put up a dual port
> 0600 baud network nodes.

        True, and it will only take 5 of those to reach me in Las Cruces,
NM. That will take 10 years. Should we stop sending the mail between us
while we save this money?

>
> >
> >   3. I and Remi F6CNB have internet access given to us by our
> > employer. We use this to ftp mail and like that.
>
> I have the same access. I do *NOT* use it for ham radio. Doing so
> would remove all incentives to build a better network.
>
        I use it because the network is so slow it isn't capable or it
doesn't exist. Without the internet there would be no path period.

> >
> >   4. There are 50 or more BBS hams forwarding to each other via the
> > telephone. They are paying the pervailoing rates.
>
> The two I have talked with claim their phone bill runs $125 - 150 per
> month. For two years of this cost, they could put a full-up CLOVER
> HF link on air, or build several dual port 9600 baud network nodes.
> Paying the money to the phone company ... (see comments above).

        See my comments above. How many years must they wait before there
is a path?

> >
> >   5. I am part of the fidonet system that does cover the world. We
> > can do what we do because we have software that sends out our mail during
> > the cheap part of the night.
>
> What does this have to do with ham radio?
>
        My point is that for bulletins during the sunspot minimum the
only way to get them around the country is by telephone.

> >
> >   So to summarize, we hams have not a chance to do better than we
> > are now because we cannot afford our own network! We can work on local
> > ham radio networks that lead to the home of hams willing to pay the
> > telephone company what it asks to send your message across the country
> > and the world.
>
> Huh? We *choose* to pay other providers for the use of their comminications
> facilities instead of building our own. Making this choice, and we *do*
> seem to be making this choice, will not only stop future growth of the
> ham radio network, but will lead to the destruction of the existing network.
>
        Your the one sayin that Hank. My view is that if we stop thinking
about a grand national network, and instead focus on improving Local
networks we will be doing something that's do-able.

> We have several examples of this effect here in the PNW *now*.
> Perhaps I'll write up the details and post them. Just ask me about the
> southern / central Oregon problems ... the ham radio network suffered
> a failure, and rather than fix the ham radio network, some folks decided
> to use the telephone company instead. It now appears that the network
> will never be repaired since "The telephone links work real well for us."
>
        You have the same problem we do in NM. The network must cross
areas of our state that have less than 10 active hams and the net must go
100 miles or more. If not one of the ten are packet hams (usual case)
then someone from a larger town must put up a node or two. These "sugar
dadies" are few and far apart.

> But what does this have to do with ham radio anyway? We can all put up
> our own internet site, fido site, or direct link LL bbs, and will never
> need a radio (or a hma license) at all.
>
> I *thought* this group was here to help move forward the project of
> creating and operating a ham radio network. Let's *do* that.
>
> Just my observations and opinions ...
>
>   ... Hank
>

Me too but I think we should stay local, not try to wire the entire nation with a satellite that is put in orbit by our government or the companies in the business of orbiting commercial satellites. How do you call this ham radio Hank? My experiance with the very few we hams can get launched for free, is that they are not available for me to use. It seems they are in test a lot of the time...

The only REAL national packet network are the bbs sysops with STA approval to go unmanned while at work. These stations do pass a lot of packet mail and I commend them! Wish we had one closer than 300 miles north of my home. Now 20 meters seems the only reliable band...

>
>
> --
>
> Hank Oredson @ Mentor Graphics   Library Operations
> Internet   : hank_oredson@mentorg.com   "Parts 'R Us!"
> Amateur Radio: W0RLI@W0RLI.OR.USA.NOAM
>
73, de karl k5di

92. Dayton '94 forum info needed

From: jra@ag9v.ampr.org
Date: Tue, 13 Dec 1994 13:10:28 -0500 (EST)
To: netsig@tapr.org
Message-ID: <199412131810.NAA19082@ag9v.ampr.org>
Rendered body type: text/plain

Help!

I'm looking for the name/address of the fellow who ran a packet forum at Dayton last year. It was held at one of the hotels along I75 (the Rodeway Inn, maybe) and went on at the same time as the TAPR meetings.

We'd like to get the two groups together for Hamvention '95.

Any pointers would be appreciated...

John
--
John Ackermann   AG9V
Internet: jra@ag9v.ampr.org
Packet: AG9V@N8ACV.#DAY.OH.USA

93. Re: [NETSIG:473] Re: Reality and a nationwide net

From: tmoulton@ram.net
Date: Tue, 13 Dec 94 14:06:01 EST
To: netsig@tapr.org
Message-ID: <05925.15021573@RAMail>
Rendered body type: text/plain

>   My view is that if we stop thinking
>about a grand national network, and instead focus on improving Local
>networks we will be doing something that's do-able.
>

There may be a way to attack both problems at the same time, if we improve the local networks with a solution that can clearly support a national network.

Now, don't be suprised, but IMHO ROSE is that solution. Also see comment below.

>

>   The only REAL national packet network are the bbs sysops with STA
>approval to go unmanned while at work. These stations do pass a lot of
>packet mail and I commend them! Wish we had one closer than 300 miles
>north of my home. Now 20 meters seems the only reliable band...
>

The HF stations do make up a fantastic Store and Forward network. What would
be very exciting is to run ROSE on HF. I have done it and have had great
success. I ran a link to Costa Rica for almost a year on 15M using a
TNC-320 and a TS-430 w/100 foot center fed zepp.

ROSE only has 3 bytes of overhead so it does not add excessive bagage to
the packets...

I wish I was on HF now. tower is still on the ground. (Not IN :<)

_____
Thomas A. Moulton, W2VY
w2vy@ram.net

94. Nationwide Network Thoughts

From: fuseki!mtewe!vodall@hprwp.fc.hp.com
Date: Tue, 13 Dec 1994 14:52:53 -0700 (MST)
To: netsig@tapr.org (NETSIG TAPR)
Message-ID: <m0rHf9T-0002gXC@mtewe.kevin.mt.us>
Rendered body type: text/plain

The discussion of the past few days has been excellent. Lots of
ideas brought up, problems noted and questions raised.

Here's some thoughts I had:

I disagree with Hank's statement #3 - that we should never use non-amateur
facilities. There's just too much good stuff out there. If we artificially
isolate ourselves from it we're the ones who will miss out.

But I agree whole-heartedly with Hank's belief behind the statement. We
need to continue to work on and invest in our own network. To get
too comfortable using the "others" will only lead to stagnation
of our system.

This discussion has shown me some of the areas where work and innovation
can still be used to make some big steps in the digital communications
arena.

We need digital regenerating repeater satellites in orbit... A couple
high orbit 56K channels would do a lot to tie our local nets together.

And speaking of satellites - we should be working with our fellow
communications experimenters in the FIDO network. With the "Planet
Connect" style of bulletin forwarding it would be trivial for the Amateur
Bulletins to be forwarded across the country and to the FIDO bbs's. And
then fed to the local packet systems. Blasphemous? Maybe. But it's
an alternate communications system that is available and not being used.
It would be better than relying on the landline..

And what about HF? We have the frequencies. Let's use them. Only
lets use them better than we have been. Two ideas - is there some way
to "capture" bulletins being broadcast between other systems. Something
like that would work ideal for me in Montana where I have the equipment
but not the "connections" into the forwarding system. Besides - having
to resend a bulletin time after time is a terrible use of resouces. The
satellites have this technology - why aren't we using it on HF. A few
super-stations should be able to easily and efficiently feed most of the
country.

The second idea - let's get some better digital links between local networks
going on HF. It seems to me that given some revolutionary new digital
concepts there's no reason we couldn't have a nationwide network that allowed
real time connections anywhere at least during certain times of the day.
There are a couple hot HF packet frequencies with lots of gateways - but
their usefulness is almost null due to the inappropriate nature of standard
CSMA AX25 technology. There must be a way to do it right - let's find it
and implement it!

--

Bill

Reply-To: vodall@bigsky.dillon.mt.us
Amateur Packet: wa7nwp@n7see.mt.usa.noam

95. ACTS (Was Re: Looking for inform)

From: Jeff King <wb8wka@wb8wka.ampr.org>
Date: Tue, 13 Dec 94 22:14:30 UTC
To: netsig@tapr.org
Message-ID: <6282@wb8wka.ampr.org>
Rendered body type: text/plain

Tim Baggett mentioned in a earlier message the NASA satelitte 'ACTS' which
I *think* stands for Advanced Communications Technology Satellite. I'm
not a expert on the system but think its really neat.

First off, it uses a uplink/downlink in the 24ghz/36ghz range or there
abouts. But thats not the neat thing. The neat thing is it uses a very
narrow spot beam. You ask, what good is that? Well the neat thing is the
spot beam is movable on the fly... I think they use a phased array. Anyways,
the beam hops from station location to station location. The earth station,
at Tim correctly points out, is very modest. In fact, at one time, NASA was
solicting people to experiment with the ACTS satellite. I've not followed the
project for the last few years, but I think the above information is somewhat
accurate.

I'd even considered a earth bound version of the above (at least in my mind
I have). It would be optically based, using galvo mirrors that would steer
a high placed data modulated laser and photodetector. The user terminals would
have a low speed control channel (to tell the galvo mirrors "hi I'm here and
this is were to point) but most data could go via the optical link. The system
would be token ring by its nature.

73

Jeff
SMTP   - wb8wka@wb8wka.ampr.org [44.102.16.16] | Operating
Internet - wb8wka@merit.edu , jking@merit.edu | on the edge
AX25   - wb8wka@wu8c.#SEMI.MI.USA.NOAM | of Chaos

96. Re: [NETSIG:469] Re: Looking for information.

From: Barry McLarnon VE3JF <bm@hydra.carleton.ca>
Date: Tue, 13 Dec 1994 23:49:07 -0500 (EST)
To: netsig@tapr.org
Message-ID: <199412140449.XAA26309@hydra.carleton.ca>
Rendered body type: text/plain

Tom sez:
> Yes, but if I needed my data to be routed into an IP box to get onto the
> backbone it is very likely that it would have to travel far in many regions.

No doubt, but it doesn't have to be that way. We're talking about the
future network, not the status quo, right?

> >> Here is where we disagree.
> >>
> >> My view of TCP/IP is a User Application that communicates from User PC to
> >> User PC. Not a Network.
> >
> >Your view seems a little distorted. TCP/IP is a protocol stack, not an
> >application. The neat thing about it is that the protocol engine is
> >freely available, and you can drop it in your PC (or Mac, etc) and have
> >instant access to many wondrous applications... and you *are* part of the
> >network. This isn't fundamentally different from ROSE, but in ROSE the
> >protocol engine resides in a dedicated piece of hardware, the tnc. I'd
> >rather have it in my PC, where I can do more with it.
> >
>
> It is interesting that every time TCP/IP is mentioned the concept of
> 'wondrous applications' pops up.

Yes, and with good reason. Without interesting applications, what's the
point of having a network?

> The primary feature of a backbone should be Communication.

Absolutely. I don't recall saying otherwise. And backbone nodes should
not have a bunch of Level 4-7 cruft, they should be routers.

> >> If we have your fully connected ip network and i have a tnc and

> radio, how > do
> >> I connect to my father in CA?
> >
> >For starters, I bet he'll soon be running TCP/IP. :-) He'll be running it

> Here's a shock - I'm not running TCP/IP ! I am one of the Millions of the
> unwashed.

Heh... no shock at all. So what's your point?

> >because it was readily available (probably came with his computer), easy
> >to set up (note that I'm not necessarily talking about NOS here... and
> >there's still lots of room for improvement in this area... but it will come)
> >and he'll be missing out on a lot of the most interesting packet application
>
> I love it! Now we're telling my dad what applications HE Wants! Maybe He and
> I don't mind missing these applications.

Apparently you missed the smiley there. Your family loyalty is touching, but
I'm not telling anyone what they should do or want. What I do know is a lot
of people, newcomers and oldtimers alike, whose interest in packet has been
sparked (or rekindled) by those very applications. Perhaps you can explain
why you're so antagonistic towards them...

> >if he doesn't.
> >
> >> Is it a simple command or do I have to login to a server and then startup
> >an
> >> application and then telnet to his local system and then go out the local
> >rf
> >> network?
> >
> >Gee, you make it sound tough. Can I at least assume that you have a
> >computer? :-) You could take the easy way out and run TCP/IP, and have
> >some fun with it... or you could write a little script for your favorite
> >terminal emulation program which automates making the connection through the
> >gateways.
> >
> >> In ROSE it is always a simple TNC connect command (ie a SABM with 2 digi
> >> fields)
> >>
> >> Let's K.I.S.S. since we don't have IP in every garage, if we want it or no
> >t.
> >
> >You seem to be suggesting that the network be designed to facilitate the
> >most mundane of applications: keyboard-to-keyboard chat between two users
> >running the equivalent of dumb terminals. That's just not where it's at
> >anymore.
>
> So we should exclude people who can/don't want to run TCP/IP.

Sigh... you're not paying attention. The operative word in the above is
'facilitate'. I want a network which is optimized for what I consider to
be (IMHO, of course) the most interesting applications. That doesn't
mean that it precludes doing all that fun stuff that we did back in the
80's, but I think keyboard-keyboard chat and the like are steadily
diminishing interests... why cater to them?

Barry

--
  Barry McLarnon VE3JF/VA3TCP | Internet: bm@hydra.carleton.ca
  Ottawa Amateur Radio Club | AMPRnet: barry@va3tcp.ampr.org
  Packet Working Group | FreeNet: aa187@freenet.carleton.ca

97. Re: [NETSIG:478] Re: Looking for information.

From: tmoulton@ram.net
Date: Wed, 14 Dec 94 07:06:21 EST
To: netsig@tapr.org
Message-ID: <05929.15021573@RAMail>
Rendered body type: text/plain

>
>No doubt, but it doesn't have to be that way. We're talking about the
>future network, not the status quo, right?
>
My point is that the local net should not be required to have an IP guru
to gain access to the long haul network.

>> It is interesting that every time TCP/IP is mentioned the concept of
>> 'wondrous applications' pops up.
>
>Yes, and with good reason. Without interesting applications, what's the
>point of having a network?
>
The point of having a network is Communications. and the idea of an
application is not linked to TCP/IP.

>> The primary feature of a backbone should be Communication.
>
>Absolutely. I don't recall saying otherwise. And backbone nodes should
>not have a bunch of Level 4-7 cruft, they should be routers.
>

That's right the level 4 and above, if used, is up to the user, not the
network to select. If we have a Level 3 network then it IS left up to the
user to select the higher layer protocols. If the netwotk is IP then we
have forced their hand.

>
>Heh... no shock at all. So what's your point?
>

An IP backbone will force people to run IP, whereas the features that are
in ROSE will allow any existing or new protocol to be used, let's keep
the system open for all to use.

>I'm not telling anyone what they should do or want. What I do know is a lot
>of people, newcomers and oldtimers alike, whose interest in packet has been
>sparked (or rekindled) by those very applications. Perhaps you can explain
>why you're so antagonistic towards them...

Great the people who want to use IP should be able to, but the flip side is
that if some don't want to they should not be forced to.

>Sigh... you're not paying attention. The operative word in the above is
>'facilitate'. I want a network which is optimized for what I consider to
>be (IMHO, of course) the most interesting applications. That doesn't

How about a network that can support ALL modes of communication?

>mean that it precludes doing all that fun stuff that we did back in the
>80's, but I think keyboard-keyboard chat and the like are steadily
>diminishing interests... why cater to them?
>

It seems that when talking to you you want to convert the world to IP, for
their own good or because they really want to use those killer apps.

My view of the network is it should be a efficent as possible, add the least
overhead and allow all modes of packet activity. I am going to acheive that
in ROSE by providing a fully transparent system that accepts all protocols
that can be supported within the confines of AX.25 with addressing and
routing that can support enough switches to provide a nation wide network.

Barry, unless you have some very specific questions that I can answer I see
no point in wasting everyone's time reading this dialogue.

If nothing else I am sure that we agree that are views are different enough
that we will not agree to much else on this topic.

THE END

vy 73,

_____
Thomas A. Moulton, W2VY
w2vy@ram.net

98. Software Problem?

From: Klarsen <k5di@acca.nmsu.edu>
Date: Wed, 14 Dec 1994 09:30:53 -0700 (MST)
To: TAPR BBS Sig <bbssig@tapr.org>
Cc: Sig Networking <netsig@tapr.org>
Message-ID: <Pine.SUN.3.91.941214092802.20373B-100000@kazak>
Rendered body type: text/plain

I have not received a single tapr SIG message for over 24 hours.
Has anyone else this problem? I have done nothing to cause this problem
to occur. I did get a criptic e-mail about something being postponed, but
nothing was explained...

        73, de karl k5di@k5di.nm.usa.na k5di@acca.nmsu.edu
           DOS and Windows some say are bad software, but facts
           do not support this. Bill Gates has more than a
                       Billion dollars!

99. Re: [NETSIG:480] Software Problem?

From: tmoulton@ram.net
Date: Wed, 14 Dec 94 12:03:48 EST
To: k5di@k5di.nm.usa.na, k5di@acca.nmsu.edu, netsig@tapr.org
Message-ID: <05931.15021573@RAMail>
Rendered body type: text/plain

>From: netsig@tapr.org (netsig (tapr))
>Date: Wed, 14 Dec 94 10:55 CST
>Reply-To: netsig@tapr.org
>Sender: netsig@tapr.org
>To: netsig@tapr.org
>Subject: [NETSIG:480] Software Problem?
>
>
>   I have not received a single tapr SIG message for over 24 hours.
>Has anyone else this problem? I have done nothing to cause this problem
>to occur. I did get a criptic e-mail about something being postponed, but
>nothing was explained...
>
>
>   73, de karl k5di@k5di.nm.usa.na k5di@acca.nmsu.edu
>   DOS and Windows some say are bad software, but facts
>   do not support this. Bill Gates has more than a
>   Billion dollars!
>

#479 was 4 hours earlier

ack this one directly

____
Thomas A. Moulton, W2VY
w2vy@ram.net

100. Re: [NETSIG:476] Nationwide Network Thoughts

From: hank_oredson@MENTORG.COM (Hank Oredson)
Date: Tue, 13 Dec 94 16:08:09 PST
To: netsig@tapr.org
Message-ID: <9412131608.ZM2315@hanko>
Rendered body type: text/plain

On Dec 13, 5:16pm, fuseki!mtewe!vodall@hprwp.fc.hp.com wrote:
> Subject: [NETSIG:476] Nationwide Network Thoughts
>
> The discussion of the past few days has been excellent. Lots of
> ideas brought up, problems noted and questions raised.

<stuff removed>

> The second idea - let's get some better digital links between local networks
> going on HF. It seems to me that given some revolutionary new digital
> concepts there's no reason we couldn't have a nationwide network that allowed
> real time connections anywhere at least during certain times of the day.
> There are a couple hot HF packet frequencies with lots of gateways - but
> their usefulness is almost null due to the inappropriate nature of standard
> CSMA AX25 technology. There must be a way to do it right - let's find it
> and implement it!

A group of us "old time HF packet folks" went to CLOVER over a year ago.
This is a good mode for moving the store and forward traffic, particularly
when batch compression is used. Data rates are at least 10 times what
I observed on packet. The CLOVER protocol will also run at slow data
rates, and does very well in noisy and fading channels. It occupies
a 500 Hz bandwidth. However, there is no "backend for BPQ" yet, and
I've been too lazy to write one, so there is no possibility of using
CLOVER as a WAN backbone. Would be fun to play with though ...

... Hank

--

Hank Oredson @ Mentor Graphics Library Operations
Internet : hank_oredson@mentorg.com "Parts 'R Us!"
Amateur Radio: W0RLI@W0RLI.OR.USA.NOAM

101. Winsock 'n stuph

From: KY1TLuck@aol.com
Date: Wed, 14 Dec 1994 14:23:46 -0500
To: netsig@tapr.org
Message-ID: <941214142344_5985104@aol.com>
Rendered body type: text/plain

Hi gang -

I've been toying for some time with the notion of writing
a suite of applications that looks a LITTLE like the usual BBSs we
all know and love. It would serve several purposes that are
not being met by presently-existing AX.25 or TCP/IP BBS-type
software, but at any rate, for the time being, let's just label
the application as a "BBS".

"BBS" will be written with Visual Basic, and will run from
the Windows environment, very likely on a 60 MHz Pentium.

Now, as I recall, KE3Z has told me that if HE were to do it,
he'd want/need to run the Windows application on one machine,
coupled, perhaps via a SLIP connection, to my 386 which is
running PA0GRI's version of NOS.

Finally -- my questions:

1. What's the main stumbling block that would keep me from
running my Windows application AND the NOS box from the same
computer -- the Pentium? I trust Jon and fully believe that
there must be an excellent reason why he'd do it the way he's
suggested. I just need some advice from y'all as to why things
need to be that way.

2. Do any of you have personal experience running Trumpet Winsock
so as to implement two different applications like this? I could
use some guidance (maybe via email?) as to how to make the SLIP
connection happen, and how to configure Winsock correctly, but I'd
certainly be especially grateful if I could locate someone with
specific experiences along these lines.

Any thoughts, folks?

73

Luck Hurder, KY1T ** KY1TLUCK@AOL.COM **
Supporter of AMSAT, TAPR, and NARA.
---

102. Re: [NETSIG:482] Re: Nationwide Network Thoughts

From: tmoulton@ram.net
Date: Wed, 14 Dec 94 14:38:51 EST
To: netsig@tapr.org
Message-ID: <05933.15021573@RAMail>
Rendered body type: text/plain

><stuff removed>

>A group of us "old time HF packet folks" went to CLOVER over a year ago.
>This is a good mode for moving the store and forward traffic, particularly
>when batch compression is used. Data rates are at least 10 times what
>I observed on packet. The CLOVER protocol will also run at slow data
>rates, and does very well in noisy and fading channels. It occupies
>a 500 Hz bandwidth. However, there is no "backend for BPQ" yet, and

With CLOVER, PACTOR and the like, if they support 8 bit async data then
you could plug them into a ROSE switch to create an Async X.25 HF Backbone.

>I've been too lazy to write one, so there is no possibility of using
>CLOVER as a WAN backbone. Would be fun to play with though ...
>
>   ... Hank

103. Re: [NETSIG:484] Re: Nationwide Network Thoughts

From: hank_oredson@MENTORG.COM (Hank Oredson)
Date: Wed, 14 Dec 94 12:21:36 PST
To: netsig@tapr.org
Message-ID: <9412141221.ZM3340@hanko>
Rendered body type: text/plain

On Dec 14, 1:47pm, tmoulton@ram.net wrote:
> Subject: [NETSIG:484] Re: Nationwide Network Thoughts
> ><stuff removed>
>
> >A group of us "old time HF packet folks" went to CLOVER over a year ago.
> >This is a good mode for moving the store and forward traffic, particularly
> >when batch compression is used. Data rates are at least 10 times what
> >I observed on packet. The CLOVER protocol will also run at slow data
> >rates, and does very well in noisy and fading channels. It occupies
> >a 500 Hz bandwidth. However, there is no "backend for BPQ" yet, and
>
> With CLOVER, PACTOR and the like, if they support 8 bit async data then
> you could plug them into a ROSE switch to create an Async X.25 HF Backbone.

The issue would be much the same for ROSE as for any other protocol.
The majority of the work is in handling the CLOVER protocol issues,
and the link to the network backend would be fairly simple.

--

Hank Oredson @ Mentor Graphics   Library Operations
Internet   : hank_oredson@mentorg.com   "Parts 'R Us!"
Amateur Radio: W0RLI@W0RLI.OR.USA.NOAM

104. Re: [NETSIG:485] Re: Nationwide Network Thoughts

From: tmoulton@ram.net
Date: Wed, 14 Dec 94 15:44:30 EST
To: netsig@tapr.org
Message-ID: <05934.15021573@RAMail>
Rendered body type: text/plain

>The issue would be much the same for ROSE as for any other protocol.
>The majority of the work is in handling the CLOVER protocol issues,
>and the link to the network backend would be fairly simple.

Ok, I wasn't sure what the BPQ piece would look like.

be it CLOVER or what ever a point to point link could be supported
if the HF device provides a simple async stream....

we could have the switch/node use the HF device's commands to change streams
or connection ids...

not the greatest solution, but it could be fun to try...

105. Re: [NETSIG:486] Re: Nationwide Network Thoughts

From: hank_oredson@MENTORG.COM (Hank Oredson)
Date: Wed, 14 Dec 94 13:17:59 PST
To: netsig@tapr.org
Message-ID: <9412141317.ZM3352@hanko>
Rendered body type: text/plain

On Dec 14, 2:47pm, tmoulton@ram.net wrote:
> Subject: [NETSIG:486] Re: Nationwide Network Thoughts
> >The issue would be much the same for ROSE as for any other protocol.
> >The majority of the work is in handling the CLOVER protocol issues,
> >and the link to the network backend would be fairly simple.
>
> Ok, I wasn't sure what the BPQ piece would look like.
>
> be it CLOVER or what ever a point to point link could be supported
> if the HF device provides a simple async stream....
>

> we could have the switch/node use the HF device's commands to change streams
> or connection ids...
>
> not the greatest solution, but it could be fun to try...

Yes, that was the general idea I had in mind. There is a bit more
detail involved however (how is the link established? what happens
if the link drops out?). There are a number of "interesting" things
one would like to do as well: automatically change bands as conditions
change; allow for alternate links ("Odd hours, it's N6IYA, even hours
it's W5XO").

CLOVER is 8 bit clean, command and status information is handled
out of band. So the real work just involves setting up the link
and tearing down the link on the HF side. Once the link is made,
CLOVER provides an 8-bit bi-directional channel.

There is still a good deal of work involved in actually creating
such a network backend. One of the reasons I've not done one for
the BPQ switch is the lack of documentation on the BPQ backend
interface. The couple test cases I put together simply did not
work ...

   ... Hank

--

Hank Oredson @ Mentor Graphics   Library Operations
Internet   : hank_oredson@mentorg.com   "Parts 'R Us!"
Amateur Radio: W0RLI@W0RLI.OR.USA.NOAM

106. Re: Looking for information.

From: Douglas Fajardo <dfajardo@netcom.com>
Date: Wed, 14 Dec 1994 17:53:11 -0800 (PST)
To: netsig@tapr.org
Message-ID: <Pine.3.89.9412141755.A15989-0100000@netcom5>
Rendered body type: text/plain

On Sun, 11 Dec 1994 tmoulton@ram.net wrote:

> <prior stuff omitted for brevity)
> But if the backbone is based upon IP there will be regions of the country
> where a backbone runs, but people will need to have their data travel many
> miles to get to one of those Gateway system.
>
> Whereas if the backbone were one that provided support for *all* ax.25 uses
> at every point then this would not be a problem.

Uh, not to be a nit picker .... but I thought a backbone was supposed
to be a link that was NOT accessable to users, in order to provide a
pipeline between areas or BBS systems.

Second, How much machine do you think IP requires? JNOS originally ran
on a base XT :)

I don't know wether or not IP is the answer... but acessability to
Ham's is not, thanks to Phil Karn (and those who followed him) a problem.

***** DOUG, WB6KNY
       dfajardo@netcom.com

107. Re: [NETSIG:485] Re: Nationwide Network Thoughts

From: Douglas Fajardo <dfajardo@netcom.com>
Date: Wed, 14 Dec 1994 18:24:20 -0800 (PST)
To: netsig@tapr.org
Message-ID: <Pine.3.89.9412141849.A15989-0100000@netcom5>
Rendered body type: text/plain

I've been reading this thread with some interest. Having seen 'The
Rose' mentioned several times recently, I find myself ignorant (and I
suspect others may be too...)

    Can someone relate me a general description of what the ROSE
switch actually does, and how it works? I am very familiar with NETROM and
several different routing protocols in the TCP/IP 'suite', but have not
had time to study ROSE.

I don't want to start a ROSE vrs NETROM vrs .... war !:) so
lets please just keep this to a simple functional description.

Thanks!
**** DOUG, Wb6kny
dfajardo@netcom.com

108. Re: [NETSIG:479] Re: Looking for information.

From: Barry McLarnon VE3JF <bm@hydra.carleton.ca>
Date: Thu, 15 Dec 1994 00:47:41 -0500 (EST)
To: netsig@tapr.org
Message-ID: <199412150547.AAA31415@hydra.carleton.ca>
Rendered body type: text/plain

> >No doubt, but it doesn't have to be that way. We're talking about the
> >future network, not the status quo, right?
> >
> My point is that the local net should not be required to have an IP guru
> to gain access to the long haul network.

Better he should need a ROSE guru? Seriously though, the need to have
guru status in order to set up an IP router tends to be greatly exaggerated.
Anyone running NOS is potentially a provider of gateway services for plain
vanilla ax.25 users, and I know lots of people who are successfully running
NOS and are far from being gurus.

> >> It is interesting that every time TCP/IP is mentioned the concept of
> >> 'wondrous applications' pops up.
> >
> >Yes, and with good reason. Without interesting applications, what's the
> >point of having a network?
> >
> The point of having a network is Communications. and the idea of an
> application is not linked to TCP/IP.

Like it or not, most of the new networking applications that people want to
use nowadays run on top of TCP/IP. Maybe not out in the hinterlands of
packet yet, but give 'em time...

> >> The primary feature of a backbone should be Communication.
> >
> >Absolutely. I don't recall saying otherwise. And backbone nodes should
> >not have a bunch of Level 4-7 cruft, they should be routers.
> >
>
> That's right the level 4 and above, if used, is up to the user, not the
> network to select. If we have a Level 3 network then it IS left up to the
> user to select the higher layer protocols. If the netwotk is IP then we
> have forced their hand.

But IP *is* a Level 3 network! Users have a choice: they can use TCP, UDP,
etc... they can even run ax.25 on top of IP if they're perverted... :-)
And the ax.25 Level 2 is still there for those who prefer to run in 'dumb
terminal' mode and let the applications run on other systems...

> >Heh... no shock at all. So what's your point?
> >
> An IP backbone will force people to run IP, whereas the features that are
> in ROSE will allow any existing or new protocol to be used, let's keep
> the system open for all to use.

I said it before and I'll say it again: an IP backbone does not force
people to "run IP".

> >I'm not telling anyone what they should do or want. What I do know is a lot
> >of people, newcomers and oldtimers alike, whose interest in packet has been
> >sparked (or rekindled) by those very applications. Perhaps you can explain
> >why you're so antagonistic towards them...
>
> Great the people who want to use IP should be able to, but the flip side is
> that if some don't want to they should not be forced to.

I don't use force... I prefer to show by example something which I think
is better. The Ottawa area network is strongly IP-oriented, but there are
still lots of people using plain old ax.25. I don't think they feel
pressured to 'run IP' (but many want to after seeing it demo'ed)... nor
or they left out in the cold if they don't. Should I gather some
testimonials? :-)

> >Sigh... you're not paying attention. The operative word in the above is
> >'facilitate'. I want a network which is optimized for what I consider to
> >be (IMHO, of course) the most interesting applications. That doesn't
>
> How about a network that can support ALL modes of communication?
>
> >mean that it precludes doing all that fun stuff that we did back in the
> >80's, but I think keyboard-keyboard chat and the like are steadily
> >diminishing interests... why cater to them?
> >
>
> It seems that when talking to you you want to convert the world to IP, for
> their own good or because they really want to use those killer apps.
>
> My view of the network is it should be a efficent as possible, add the least
> overhead and allow all modes of packet activity. I am going to acheive that
> in ROSE by providing a fully transparent system that accepts all protocols
> that can be supported within the confines of AX.25 with addressing and
> routing that can support enough switches to provide a nation wide network.

And my view is that we'd better base the network on something better than
10-year-old TNC technology, or it won't amount to much. IP is no less
"open" than ROSE, but it does provide a more powerful and widely-supported
base for applications, which are the only reason for a network to exist.

> Barry, unless you have some very specific questions that I can answer I see
> no point in wasting everyone's time reading this dialogue.

Finally, something we agree on. :-)

> If nothing else I am sure that we agree that are views are different enough
> that we will not agree to much else on this topic.

I hope we provided some entertainment value, anyway.

> THE END

Hmmm... guess I've been KISS'ed off. [For the humor-impaired: that's a joke]

> vy 73,
>
> _____________________________
> Thomas A. Moulton, W2VY
> w2vy@ram.net

73 to y'all too...

Barry

--
  Barry McLarnon VE3JF/VA3TCP | Internet: bm@hydra.carleton.ca
  Ottawa Amateur Radio Club | AMPRnet: barry@va3tcp.ampr.org
  Packet Working Group | FreeNet: aa187@freenet.carleton.ca

109. Re: [NETSIG:488] Re: Looking for information.

From: tmoulton@ram.net
Date: Thu, 15 Dec 94 05:21:05 EST
To: netsig@tapr.org
Message-ID: <05935.15021573@RAMail>
Rendered body type: text/plain

>Uh, not to be a nit picker .... but I thought a backbone was supposed
>to be a link that was NOT accessable to users, in order to provide a
>pipeline between areas or BBS systems.

gee, local networks need to be able to be wired into the backbone to be
part of the national network. I was not implying direct user access to the
backbone channel.
>
>Second, How much machine do you think IP requires? JNOS originally ran
>on a base XT :)

my concern is not hardware.

If we have two user in two different lans that choose not to run IP and they
wish to communicate, and the backbone is IP based we will have the following
problem.

They will be required to go through a TCP/IP gateway, which will add the
Level 4 + protocol stacks, above and beyond what ever protocol they are
using. They could have a very good layer 4 + running in their PC's, but
just because it doesn't match what is in the backbone they will suffer
the additional overhead of a SECOND level 4 protocol.

If the backbone were transparent to AX.25 then you all can run what ever
Layer 4 + you want (Or even NONE!)

It is a concern for the best performance for ALL protocols.

>***** DOUG, WB6KNY
>   dfajardo@netcom.com
>
>

110. Re: [NETSIG:489] Re: Nationwide Network Thoughts

From: tmoulton@ram.net
Date: Thu, 15 Dec 94 06:35:29 EST
To: netsig@tapr.org
Message-ID: <05939.15021573@RAMail>
Rendered body type: text/plain

Doug,

Here is the short form of what ROSE is:

ROSE X.25 Packet Switch

ROSE uses AX.25 for User access and X.25 Packet Layer on top of AX.25 for
internodal links.

The addressing used is X.121, which is a Global address space.

Each switch retains all configuration information in bbRAM, which includes
routing table information to route calls to the entire network.

It was designed to be a National/Global networking solution and a requirement
was to be fullt transparent to any AX.25 device.

The routing table information is not dymanically created, it can be done by
hand or with NETMGR, a windows based network design program.

It also has the ability to upload custon applications, I admit there is not
much documentation for writing applications...

more info ftp to lantz.com

questions as always...

_____
Thomas A. Moulton, W2VY
w2vy@ram.net

111. Re: [NETSIG:488] Re: Looking for information.

From: David Rush <rush@cacfs.ks.erg.sri.com>
Date: Thu, 15 Dec 94 07:54:48 -0600
To: netsig@tapr.org
Cc: rush
Message-ID: <9412151354.AA27264@cacfs.ks.erg.sri.com>
Rendered body type: text/plain

>Second, How much machine do you think IP requires? JNOS originally ran
>on a base XT :)

JNOS still runs on an XT. Up until recently that's what I wuz using.
It works better on a faster machine, but it will work on an XT.
If you're wanting good IP service rather than bells and whistles, I hear
that older versions of JNOS (like 1.08) are quite reliable, and don't
have all the bells and whistles sucking up extra RAM.

David, N0OXH, rush@erg.sri.com

112. Winsock 'n stuph

From: KY1TLuck@aol.com
Date: Thu, 15 Dec 1994 09:05:14 -0500
To: netsig@tapr.org

Message-ID: <941215090513_6726550@aol.com>
Rendered body type: text/plain

WX3K suggests that he's pretty much doing what I asked the group about yesterday. Thanks, John; your input is very much valued!

I'm still in the initial stages of trying to decide how best to proceed, of course. And in that regard, I remain puzzled about why I can't run the Windows application, NOS, and even VHF and HF ports (perhaps Clover, Gtor or whatever) on the one Pentium, rather than having to connect the "Windows" machine to yet another computer via a SLIP connection and then running NOS there.

What am I missing here? Something REAL obvious, evidently!

73

Luck KY1T

113. RE: [NETSIG:490] Re: Looking for information.

From: Murphree Michael A <mamurphree@space.honeywell.com>
Date: Thu, 15 Dec 94 09:23:00 PST
To: netsig <netsig@tapr.org>
Message-ID: <2EF07A57@smtpdos.space.honeywell.com>
Rendered body type: text/plain

>I said it before and I'll say it again: an IP backbone does not force
>people to "run IP".

But it does force the backbone to carry all the overhead of IP...

A network system based on ROSE or something similar in concept doesn't force a bandwidth-limited network (at least until 1-100 Mbps links are commonplace) to
carry all the excess baggage. If you want the extra IP functions, then put an IP
router at each end of the pipe. xNOS can be easily configured to use ROSE as the pipe between stations (or neighboring LANs).

Mike

114. The future of packet networks and value of TCP/IP

From: ALYNCH@WPGATE1.WPAFB.AF.MIL (Andrew J. Lynch)
Date: Wed, 14 Dec 1994 14:20 EST
To: netsig@tapr.org
Message-ID: <m0rIFWn-000L70C@mailgate.wpafb.af.mil>
Rendered body type: text/plain

Form: Memo
Text: (57 lines follow)
Net Sig Folks,

I have been watching this thread for the last few days now and haven't seen anyone mention the most important reason (IMHO) to move towards TCP/IP based packet networking:

INTERNET

Yes, the mighty TCP/IP based internet is rolling toward us and swallowing up networks by the score every day. It has made many things in its path obsolete and crushed many an obscure, if technically superior, networking protocol. Not the least of which was GOSIP. Packet networks using other protocols will eventually need to be redesigned and rebuilt to follow this standard as the pressure from users to join internet becomes overwhelming.

Ignoring this fact and basing a packet network on anything other than TCP/IP over AX.25 is denying the inevitable assimilation of .AMPR.ORG and all the other packet networks, including FIDO and everyone else, into the internet. I know TCP/IP (especially over AX.25) is far from perfect, but a flawed standard that virtually everyone uses outweighs a lot of technical superiority--thus humble MS-DOS and meager Windows out sell all the UNIX, MacOS, OS/2, Solaris, AmigaOS, et al. combined.

By creating as much TCP/IP based packet networking as possible now, we will hasten the day when sending email to others across the globe through your HT is as easy as using the local repeater. I see the integration of portable computers, cellular phones, CPDP, wireless networking and amateur radio. Why not use WinSock-based Windows applications to call up the local server and check your mail? Use standard telnet or WWW to access information through

your HT while on vacation. Basically ham radio packet networking becomes a seemless extension of the existing internet. I believe its coming, albeit slowly, but undeniably.

Ham radio in general is in very serious trouble if it does not act on this and get in front while it still can. The pressure from commercial firms to access more bandwidth to add to wireless networking and cell phones is already consuming the GHz+ bands. I believe it is inevitable that they will start looking to lower frequencies (1-999 MHz) for more when GHz+ gets crowded.

The formerly unique capability of ham radio to contact people across the globe is passe now as the internet web spreads. On some usenet groups and lists, its common to see messages from all over the world. Email is going to rival phone service in market saturation in a few years at the rates it is growing.

If ham radio degenerates into a collection of anachronists using obsolete technology and obscure modes, it will fade into the mists as its aging operators become "silent keys".

TCP/IP represents internet and internet is the future.

73

Andrew Lynch, N8VEM

alynch@wpgate1.wpafb.af.mil
Use Proportional Font: true
Attachment Count: 0

115. Re: [NETSIG:496] The future of packet networks and value of TCP/IP

From: kb7uv@panix.com (Andrew Funk)
Date: Thu, 15 Dec 1994 12:12:45 -0500
To: netsig@tapr.org, netsig@tapr.org
Message-ID: <199412151712.AA09900@panix.com>
Rendered body type: text/plain

At 09:08 AM 12/15/94 CST, Andrew J. Lynch wrote:

[snip]

>By creating as much TCP/IP based packet networking as possible now, we will
>hasten the day when sending email to others across the globe through your HT
>is as easy as using the local repeater.

This is a mail gateway function, and in my opinion has nothing to do with choosing a backbone networking technique. "Apples and pranges."

> I see the integration of portable
>computers, cellular phones, CPDP, wireless networking and amateur radio. Why
>not use WinSock-based Windows applications to call up the local server and
>check your mail? Use standard telnet or WWW to access information through
>your HT while on vacation. Basically ham radio packet networking becomes a
>seemless extension of the existing internet. I believe its coming, albeit
>slowly, but undeniably.

Yes, these are great ideas. However, they have nothing to do with the choice of backbone! To do all you ask one merely needs a TCP/IP servers which can communicate via the backbone.

>TCP/IP represents internet and internet is the future.

But the Internet is not operating over the limitted bandwidth links we use. Yes, our link bandwidth will increase in the future, but will it even come close to approaching that available over the Internet? I doubt it...

Why saddle the backbone with the overhead imposed by TCP/IP for all traffic?

Rather, choosing for the backbone a technology which transparently passes all data with a minimum of overhead seems to be a more appropriate choice for use over Amateur Radio.

73, Andy
--
  _____________________ Andrew Funk, KB7UV _____________________
 | Tech Producer/Editor   Internet: kb7uv@panix.com |
 | WCBS-TV Channel 2 News   New York, NY USA |

```
 |             ---  INSERT COMMERCIAL HERE  ---             |
```

116. Re: [NETSIG:491] Re: Looking for information.

From: ron@chaos.eng.wayne.edu (Ron Atkinson)
Date: Thu, 15 Dec 1994 14:53:26 -0500 (EST)
To: netsig@tapr.org
Message-ID: <9412151953.AA00545@chaos.NIS.chaos>
Rendered body type: text/plain

All this discussion about TCP/IP and ROSE is fun, and they are both
good and I'd rather see one or both of them in place than something
like NETROM, but there is a reason why many are not going to ROSE
right now, and that's hardware.

I think ROSE is good at what it does, but I don't know enough about it
(there are no ROSE nodes around here, we're all TCP/IP based) and right
now people are putting up PC's at sites and and P10 switches due to
the power. Can ROSE run on something other than an underpowered TNC to
handle something like Barry's 56k packet network? They run PI boards at
56k and many other people are too. It's nice to also put up a PC with a
single IP address and have multiple ports using external tnc's, DRSI
cards, PI boards, PacketTwin cards, etc...   Just curious about ROSE
on this? Many people are running high speed with large packet sizes.
I run pretty small ones at only 512 bytes or 864 bytes on 9600, but if
I had higher speeds up I'd be running the usual 1460 byte packets that
others are running.

Like I said, I don't know enough about ROSE to know if it can handle
this right now, but this is normal in many places n packet. Many if
it was PC based and you can stick one address on it and put on all the
ports you want using whatever hardware you want and handle very large
packets at very large speeds it'll be considered more. Trying to convince
Barry that he needs it may not be a good idea since it probably can't
do what he's doing right now.

For those people that dont' have money to put up PC's at sites and all
they have is a couple of tnc's for a switch, personally I'd recommend
ROSE to them over NETROM anyday, but for anything more powerful it
usually ends up being a PC running TCP/IP.

--

Ron Atkinson N8FOW

AMPRnet : n8fow@n8fow.ampr.org
Internet : ron@chaos.eng.wayne.edu
           aa011@detroit.freenet.org

117. Re: [NETSIG:497] Re: The future of packet networks and value of TCP/IP

From: kb7uv@panix.com (Andrew Funk)
Date: Thu, 15 Dec 1994 15:36:17 -0500
To: netsig@tapr.org, netsig@tapr.org
Message-ID: <199412152036.AA24998@panix.com>
Rendered body type: text/plain

At 11:20 AM 12/15/94 CST, Andrew Funk wrote:

>"Apples and pranges."

Wait a sec...

I coulda sworn it said "Apples and oranges" when I sent it out!
                                  ^

Aaargh!
--
```
  _________________ Andrew Funk, KB7UV _____________________
 | Tech Producer/Editor           Internet: kb7uv@panix.com |
 | WCBS-TV Channel 2 News         New York, NY USA          |
 |             ---  INSERT COMMERCIAL HERE  ---             |
```

118. Re: [NETSIG:499] Re: The future of packet networks and value of TCP/IP

From: aawalmi@bhppmel.bhp.com.au
Date: Fri, 16 Dec 94 10:01:50 +1100
To: netsig@tapr.org
Cc: aawalmi@melu00.bhppmel.bhp.com.au
Message-ID: <9412152301.AA03672@melu00.local>

Rendered body type: text/plain

At 11:20 AM 12/15/94 CST, Andrew Funk wrote:

>>"Apples and pranges."

>Wait a sec...

>I coulda sworn it said "Apples and oranges" when I sent it out!
                                        ^

I thought you had invented a new fruit just to add weight to your
point.

Mike
VK2ZMF

119. Re: [NETSIG:495] Re: Looking for information.

From: makinc@hhcs.gov.au (Carl Makin)
Date: Fri, 16 Dec 1994 12:23:23 +1100
To: netsig@tapr.org
Message-ID: <199412160129.MAA22904@sserve.cc.adfa.oz.au>
Rendered body type: text/plain

At 8:23 AM 15/12/94 -0600, Murphree Michael A wrote:

>> I said it before and I'll say it again: an IP backbone does not force
>> people to "run IP".

> But it does force the backbone to carry all the overhead of IP...

Does it? There are a number of different schemes for compressing IP
overhead inlcuding VJ Compression. You don't even have to run AX.25 (of
course in the US you'll have to either get a STA or your regs changed. :-)

> A network system based on ROSE or something similar in concept doesn't force
> a bandwidth-limited network (at least until 1-100 Mbps links are

An IP network running ROSE looks like a series of SLIP links. IP users
will not be able to take advantage of ROSE routing as its routing method
(in its current form) is fundamentally incompatible with the way IP
acquires neighbour node information.

To make an IP network out of a ROSE network you will have to set up a
series of dedicated nodes with hardwired links (via ROSE) to their
neighbours. In areas that didn't have this dedicated node, any IP users
would have to arrange network connectivity manually. ROSE would be, in
effect, a means to link geographically dispersed IP subnets *very* similar
in functionality to the current Internet gateways.

I'm sure ROSE has it's place but as I want to primarily do stuff that will
require IP then ROSE is not my "network" protocol of choice. (Neither is
Netrom BTW)

Carl.

--
Carl Makin (VK1KCM)   "Speaking for myself only!"
makinc@hhcs.gov.au   'Work +61 6 289 8443'   Canberra, Australia
'The entire concept of daylight savings time is like trying to make
 yourself taller by cutting off your head and standing on it.' - Usenet Oracle

120. Re: [NETSIG:501] Re: Looking for information.

From: tmoulton@ram.net
Date: Fri, 16 Dec 94 07:23:46 EST
To: netsig@tapr.org
Message-ID: <05963.15021573@RAMail>
Rendered body type: text/plain

>An IP network running ROSE looks like a series of SLIP links. IP users
>will not be able to take advantage of ROSE routing as its routing method
>(in its current form) is fundamentally incompatible with the way IP
>acquires neighbour node information.

The multi-cast feature that I am working on will allow subnets to broadcast
their routing information to each other via ARP UI frames, so the various
subnets will learn which ROSE address what which IP stations.

>
>To make an IP network out of a ROSE network you will have to set up a

>series of dedicated nodes with hardwired links (via ROSE) to their
>neighbours. In areas that didn't have this dedicated node, any IP users
>would have to arrange network connectivity manually. ROSE would be, in
>effect, a means to link geographically dispersed IP subnets *very* similar
>in functionality to the current Internet gateways.

Exactly! The regions that want to run IP can and the regions that don't
don't! And the IP networks will be able to pass thhrough the others, since
after all to ROSE data is data.

>I'm sure ROSE has it's place but as I want to primarily do stuff that will
>require IP then ROSE is not my "network" protocol of choice. (Neither is
>Netrom BTW)
>

_____
Thomas A. Moulton, W2VY
w2vy@ram.net

121. RE: [NETSIG:501] Re: Looking for information.

From: Murphree Michael A <mamurphree@space.honeywell.com>
Date: Fri, 16 Dec 94 08:50:00 PST
To: netsig <netsig@tapr.org>
Message-ID: <2EF1C38F@smtpdos.space.honeywell.com>
Rendered body type: text/plain

>I'm sure ROSE has it's place but as I want to primarily do stuff that will
>require IP then ROSE is not my "network" protocol of choice. (Neither is
>Netrom BTW)

The problem here is that 90 percent (conservative estimate) of the users
do NOT use IP and are much less likely to support a network that doesn't
support them.   That leaves the remaining 10 percent of us to pay for 100%
of the network.

If you can't integrate the AX.25 BBSes, Keyboarders, DX Cluster users, and
maybe even APRS users ;^) into your approach, you will never gain adequate
funding to build a network. We can't depend upon individual user stations as

routing resources as they are not always dependable or distributed
uniformly
enough to provide wide area connectivity. We need pipes (at least in our
area)
to connect population centers. This means you will still need dedicated
nodes
regardless of what protocol you use.

Mike

122. Keyboard to Keyboard obsolete?

From: mwhittin@pen.k12.va.us (Mark Christopher Whittington)
Date: Fri, 16 Dec 94 11:59:24 EST
To: netsig@tapr.org
Message-ID: <9412161659.AA126849@pen1.pen.k12.va.us>
Rendered body type: text/plain

I hear a lot of people saying that keyboard to keyboard packet
is obsolete. If that's so, why do we even need to establish a
real-time network accross the nation, or accross the world?
According to those who believe that keyboard to keyboard is a
waste of spectrum because it's slow, and could be done faster
on the phone or on the repeater or on HF, what we should be
improving is the mail handling backbone on HF. Hey, if
keyboard to keyboard is obsolete, then why do we need these
local networks to begin with? Just make sure that everyone can
hit _A_ bbs, and they shouldn't NEED to connect anywhere else,
since they dont need to do keyboard to keyboard. Everything
can be passed from bbs to bbs, and everyone can access the same
information. And, what's with all these DX'ers tying up all
the HF spectrum? For nothing more than a "r 5NN also 5NN.
QRZ?" Gee, what a waste. Or how about contest weekends? "NR
7236 5NN VA. TU. QRZ?" Another huge waste! Or how about
those long rambling rag chews that last for hours? We don't
REALLY need those, do we? I'm sure we could devise a way for
hams to digitaly record their information that they want to
relay to another amateur, and we could pass it over packet!
And something else I have never understood. Why do we allow
everyone to use the entire alloted spectrum? What we need to
do is keep all the amateur activity on small sub-allocations,

and use the majority of the HF bands for packet traffic
handling.

I think we need to continue to provide services for keyboard to
keyboard in any future packet network. I mean, even Jnos
supports keyboard to keyboard connects.

73 all
Mark, KE4MAA

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                             (` 0-0 ')
============================o00==(_)==00o=====================================
Mark Whittington | Co-SysOp, Outpost XIO BBS
Amateur Radio Operator KE4MAA, Tech. | Hampton, VA
mwhittin@pen.k12.va.us Internet | (804)850-0909
KE4MAA@N4HOG.VA.USA.NOAM AX.25 | Sysop: John Winsley
IP: 44.62.64.152 ke4maa.ampr.org | FREE VALIDATION FIRST CALL!
==

123. Re: [NETSIG:504] Keyboard to Keyboard obsolete?

From: djk@dirku.demon.co.uk (Dirk-Jan Koopman)
Date: Fri, 16 Dec 1994 18:19:52 +0100 (GMT)
To: netsig@tapr.org
Message-ID: <m0rIhFw-0001gqC@dirku>
Rendered body type: text/plain

>
> I hear a lot of people saying that keyboard to keyboard packet
> is obsolete. If that's so, why do we even need to establish a
> real-time network accross the nation, or accross the world?
> According to those who believe that keyboard to keyboard is a
> waste of spectrum because it's slow,

This is a fundamental misconception of what packet is all about!

Keyboard to Keyboard is one of the few IDEAL packet applications,
especially in the half-duplex way we do it today on TNCs. Packet works
best when there are comparitively long gaps between individual packets
from each station trying to use the channel.

The moment one of those stations starts to 'hog' the channel with a long
burst of packets (or worse, with multiple long bursts), thruput overall
goes down with a wallop.

A busy mail forwarding link with more than 2 stations on it is probably
an example of an extremely bad packet link together with horrendous
inter-keyboard response times (together with high retry rates on other
sorts of transfer).

Perhaps we should ban mail forwarding except on point to point links
specially designated for the purpose :-) ?

Dirk G1TLH (sysop GB7TLH)

124. Re: [NETSIG:494] Winsock 'n stuph

From: rdonnell@eskimo.com (Robert B. Donnell - KD7NM)
Date: Fri, 16 Dec 1994 00:28:21 -0800
To: netsig@tapr.org
Cc: ky1tluck@aol.com
Message-ID: <b-KykWml1Cf5064yn@eskimo.com>
Rendered body type: text/plain

Hi Luck and the group,

You probably can run your application and nos in the same box - the
big problem that I'm aware of is the lack of a packet driver that
'loops back' the packets from one application to the other - what I
understand a 'pty' does in the unix environment.

To do that as things stand now (as far as I'm aware), you have to
tie up two serial ports to slip-link nos to the slip packet driver. Or
you could use two ethernet cards and two packet drivers. I did this when
I was having trouble with nos not being stable enough to handle 3
radio ports and 20+ outgoing mail sockets at the same time. Under
DesqView I had one nos session acting as router between the radio
ports plus the ethernet, and the second session exclusivly handling
outbound SMTP sessions. Basicly I needed the large number of smtp

sessions so when my mailing list created a large number of outgoing
pieces of mail, and a bunch of the stations were off the air or
otherwise unreachable, that there would be enough client sessions
available to move mail to the stations that were on the air.

Having to use two COM ports or two net cards to loop back data eats up
valuable interupt lines tho. A packet driver that could be set up to
use two software interupt vectors and buffer the the data without
actually talking to external hardware would be handy to allow using
the ham software packages (like nos) at the same time as other 'glitzier'
apps like Mosaic or QVT or (fill in blank) on the air.

73, Bob

| Bob Donnell, KD7NM   bob@kd7nm.ampr.org   rdonnell@eskimo.com |
| Western Washington Amateur IP Address Coordinator   (206) 775-3651 |
----

125. Re: [NETSIG:497] Re: The future of packet networks and value of TCP/IP

From: rdonnell@eskimo.com (Robert B. Donnell - KD7NM)
Date: Fri, 16 Dec 1994 00:58:24 -0800
To: netsig@tapr.org
Message-ID: <mQLykWml1ipQ064yn@eskimo.com>
Rendered body type: text/plain

> But the Internet is not operating over the limitted bandwidth links we use.
> Yes, our link bandwidth will increase in the future, but will it even come
> close to approaching that available over the Internet? I doubt it...
>
> Why saddle the backbone with the overhead imposed by TCP/IP for all traffic?
>
> Rather, choosing for the backbone a technology which transparently passes
> all data with a minimum of overhead seems to be a more appropriate choice
> for use over Amateur Radio.
>

On the contrary, if some of the layer 1 problems were addressed, like the
use of 'slow' radios, the additional 'air time' available on a channel would
more than make up for the overhead imposed by the TCP and IP layers.

As an example, several years ago (about 10?) a fellow amateur and I did
some experiments with radios that achieved good TR switching times. We
were using open squelch and/or discriminator connections to the TNCs for
RX audio to eliminate squelch detection as a factor. We noticed that with
an audio source that was not frequency limited (such as de-emphasis) that
the carrier detection of the EXAR 2211's did not become active on noise
very often, or for very long. I was using a TNC-1 clone and an Icom
IC-22S, and the other fellow was using a GLB TNC with a Wilson WE-800.
Both of these radios had the characteristic that the PLL did not have
to re-lock between RX and TX (or vice-versa) when set for single channel
operation. We were able to communicate with no more retries than longer
TXD's with 40 mS on my station, the minimum that TNC-1 firmware allowed,
and his with approximately 28 mS of TXD.

Contrast this with some of the mobiles, and especially some of the HT's
made in recent years. It's not uncommon to find that some users have to
have 400, 500, or more mS of flags (TXD) to accomodate their transmitter,
and/or the other guy's receivers' slow response. Makes the approximately
300 mS it takes to send the TCP and IP information a lot less significant.

Another possible factor (Tom can correct me if I'm wrong) is that the
way TCP/IP is used in the most common circumstances is in datagram mode.
This means that there is only acknoledgement at the TCP layer. If I
understand ROSE (and I know this is true of NET/ROM) that AX.25 level 2
users get acks back immediatly for each packet they send to the switch.

The tradeoffs here are that if you have an reasonably reliable layer
1/2/3 then layer 4 acks are sufficient. If 1/2/3 (usually layer 1)
are not that good, point to point acks are probably of benefit.

To define reliable, my observations have been that on a quiet circuit
that if you can send and receive "paclen" packets with less than a
5% loss then your link is sufficiently reliable to work with end-to-end
acks. I use the 'ping' capability of NOS to do this kind of testing,
with packet sizes of 200+ bytes. If the station I'm testing with can't
get to at least a 90% return rate, then I know that our link is not up
to snuff. The real fun is when 1 kbyte pings will go through at 95+ percent.

Of course, for all this to mean anything, all stations on the lan have
to be able to reliably 'detect' all others. If you don't have this,
then all bets are off. As an aside, in this area we have seen that
having a solid base of home users whos stations are participants in the
network is a good thing. We've seen that you can more easily create
small lans where all users can hear eachother.

Part of this is because the network moves off of high hills (or towers
or buildings) into ham shack, shrinking the lan, and the home user has
a piece of the action right where he can see and touch it, and will tend
to contribute more to improving his own station than to one that's much
less tangible. It also seems to foster a spirit of cooperation.

We've been sufficiently successful in 'building' our TCP/IP network that
lately the casual AX.25/NETROM oriented users and the BBS operators have
been inquiring of us how they can use what we've built.

> 73, Andy
> --
>   _____________________ Andrew Funk, KB7UV _____________________
> | Tech Producer/Editor   Internet: kb7uv@panix.com |
> | WCBS-TV Channel 2 News   New York, NY USA |
> | --- INSERT COMMERCIAL HERE --- |
>
>

Is low overhead the always the best answer? Sure, if you're not trading
that for something else that works better.   I'd love to see a packet
protocol which provides for error correction (not detection an retries),
to reduce the number of retries due to simple single or double bit
errors. That would knock down the retries!

73, Bob

| Bob Donnell, KD7NM   bob@kd7nm.ampr.org   rdonnell@eskimo.com |
| Western Washington Amateur IP Address Coordinator   (206) 775-3651 |
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126. Packet Repeaters (?)

From: mmunster@qualcomm.com (Marvin Munster x5388)
Date: Fri, 16 Dec 1994 11:33:07 -0800
To: netsig@tapr.org
Message-ID: <ab179a9d1002100433cb@[129.46.12.181]>
Rendered body type: text/plain

I am interested in finding out information on operating packet repeaters.

What kind of problems?

What kind of paramaters are needed by users?

What is the easiest way to educate users about repeaters (compaired to nodes)?

What is the most common kind of repeater trigger? (DCD or squelch)

Any other type of repeater & user to repeater information. i.e. the
repeater will not be used as a network relay, but for users.

We are also looking into having a BBS serviced by this repeater, and
connect the network at the repeater site. Any problems there?

Thanks in advance for all of you comments.

Marvin - WB6PKK
mmunster@qualcomm.com

127. Looking for internet address

From: n3fih@omni.voicenet.com (Terry Ryan)
Date: Fri, 16 Dec 1994 15:00:48 -0500
To: netsig@tapr.org
Message-ID: <9412162000.AA24670@omni.voicenet.com>
Rendered body type: text/plain

Does anyone know if the X-1J author(s) have an email address,
and if so, what it is?
Thanks,
Terry Ryan n3fih@omni.voicenet.com

128. Re: [NETSIG-508] Packet Repe

From: "Rick Whiting" <Rick_Whiting@ATK.COM>
Date: 16 Dec 1994 14:52:26 -0600
To: netsig@tapr.org
Message-ID: <199412162050.OAA23912@ATK.COM>
Rendered body type: text/plain

Reply to: RE>[NETSIG:508] Packet Repeate
> Marvin - WB6PKK <mmunster@qualcomm.com> wrote:
>
> I am interested in finding out information on operating packet repeaters.
>
> [specific questions deleted]

Marvin, I e-mailed to you about 44K of text collected from this (TAPR) SIG
and other sources regarding digital repeaters. This should answer most of
your questions (and prevent the folks on this sig from having to repeat
themselves). The info on digital repeaters along with a lot of other
material on medium to high-speed packet can also be found in the Digital
Operations Library of CompuServe Hamnet in file HSPKT.ZIP (which contains
twelve DOS/Word documents).

Good luck. 73/Rick W0TN <rick_whiting@atk.com>

129. Re: Keyboard to Keyboard obsolete?

From: mwhittin@pen.k12.va.us (Mark Christopher Whittington)
Date: Fri, 16 Dec 94 16:31:57 EST
To: netsig@tapr.org
Message-ID: <9412162131.AA103663@pen1.pen.k12.va.us>
Rendered body type: text/plain

According to Dirk-Jan Koopman:

> This is a fundamental misconception of what packet is all about!

Keyboard to Keyboard is one of the main reasons I got into
packet. I wasn't even aware of packet bbs's until after I got
my TNC.

> Keyboard to Keyboard is one of the few IDEAL packet applications,
> especially in the half-duplex way we do it today on TNCs. Packet works
> best when there are comparitively long gaps between individual packets
> from each station trying to use the channel.

145.01 here in Virginia is a good example of that. I have
listened and heard packet after packet with no break in between
for over FIVE MINUTES! (I guess I'm one of those stupid
individuals who tries to be considerate, and operate software
CD and open squelch so I don't step on someone.)

> Perhaps we should ban mail forwarding except on point to point links
> specially designated for the purpose :-) ?

Seriously, that sounds like the best way to do it! :)

73!

Mark, KE4MAA

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                             (` 0-0 ')
============================o00==(_)==00o=====================================
Mark Whittington                      | Co-SysOp, Outpost XIO BBS
Amateur Radio Operator KE4MAA, Tech.  | Hampton, VA
mwhittin@pen.k12.va.us  Internet      | (804)850-0909
KE4MAA@N4HOG.VA.USA.NOAM AX.25        | Sysop: John Winsley
IP: 44.62.64.152  ke4maa.ampr.org     | FREE VALIDATION FIRST CALL!
================================================================================
```

130. Re: [NETSIG:498] Re: Looking for information.

From: tmoulton@ram.net
Date: Sat, 17 Dec 94 09:02:20 EST
To: netsig@tapr.org
Message-ID: <05980.15021573@RAMail>
Rendered body type: text/plain

>All this discussion about TCP/IP and ROSE is fun, and they are both
>good and I'd rather see one or both of them in place than something

>like NETROM, but there is a reason why many are not going to ROSE
>right now, and that's hardware.

ROSE runs on many TNC's all Z80 based. There is also a verison ported to
the PC. It only supports Async ports at this time, this could change.

I also have in my hands a Z182 board, which I am in the process of porting
the code to.

What's a Z182? It is a Larger, Faster Z80 w/1MB address space, 2 Sync ports,
2 Async Ports, Timers, 1 FDX channel of DMA.

The expectation is that the DMA port will be able to run in excess of 56k,
(more like 230kb IMHO) and very likely 56kb on the other port and maybe
a pair of 9.6kb channels with the addition of a second SCC.

The board is from PacComm which they say is the begining of a new line of
Z180 based boards.

I was considering 1K packer sizes, could do 2K, I guess.

>For those people that dont' have money to put up PC's at sites and all
>they have is a couple of tnc's for a switch, personally I'd recommend
>ROSE to them over NETROM anyday, but for anything more powerful it
>usually ends up being a PC running TCP/IP.

This can change. I think that a Z182 @ 20mhz or 33mhz will leave most PC's
in the dust... time will tell since the code isn't ported to the z182 yet...

the boards are real! that is usually the hard part !

_____
Thomas A. Moulton, W2VY
w2vy@ram.net

131. Level 1 Improvements MUST be made for ALL AX.25 Stations

From: tmoulton@ram.net
Date: Sat, 17 Dec 94 09:18:48 EST
To: netsig@tapr.org
Message-ID: <05983.15021573@RAMail>
Rendered body type: text/plain

>On the contrary, if some of the layer 1 problems were addressed, like the
>use of 'slow' radios, the additional 'air time' available on a channel would
>more than make up for the overhead imposed by the TCP and IP layers.

I think while you bring very valid points, you are missing one of the main
points.

Fixing the Level 1 problems is something that ALL stations need to worry
about and it can help every DEVICE without respect to what Level 2 protocol
it uses, let along the Network protocol used.

>Is low overhead the always the best answer? Sure, if you're not trading
>that for something else that works better.   I'd love to see a packet
>protocol which provides for error correction (not detection an retries),
>to reduce the number of retries due to simple single or double bit
>errors. That would knock down the retries!
>
>73, Bob
>---
>| Bob Donnell, KD7NM   bob@kd7nm.ampr.org   rdonnell@eskimo.com |
>| Western Washington Amateur IP Address Coordinator   (206) 775-3651 |
>---
>
Again these things could help ROSE as well as IP, (or IP over ROSE), heck
they could even help NetRom... but wait a sec all the things I mentioned
are Networking protocols and they all use AX.25 (Level 2) but that doesn't
matter because we're talking about improvements to Level 1, Which we all need

_____
Thomas A. Moulton, W2VY
w2vy@ram.net

132. ROSE for PC's

From: mwhittin@pen.k12.va.us (Mark Christopher Whittington)
Date: Sat, 17 Dec 94 11:33:44 EST
To: netsig@tapr.org
Message-ID: <9412171633.AA98463@pen1.pen.k12.va.us>
Rendered body type: text/plain

Can anyone tell me if ROSE is a PC aplication, and if it is,
where I can aquire it? (ie FTP sites, or if commercial, who to
call.) Thanks
73
Mark, KE4MAA

--
```
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                              (` 0-0 ')
============================o00==(_)==00o=====================================
Mark Whittington                      | Co-SysOp, Outpost XIO BBS
Amateur Radio Operator KE4MAA, Tech.  | Hampton, VA
mwhittin@pen.k12.va.us  Internet      | (804)850-0909
KE4MAA@N4HOG.VA.USA.NOAM AX.25        | Sysop: John Winsley
*Power through Knowledge*             | FREE VALIDATION FIRST CALL!
================================================================================
```
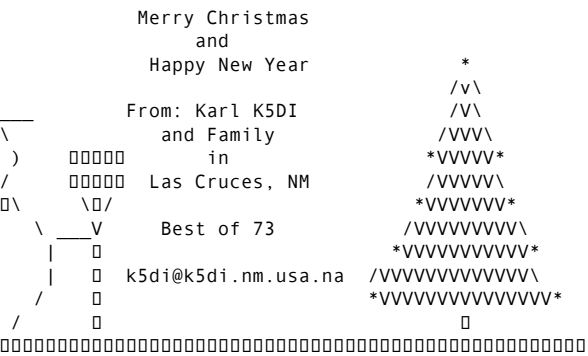

133. Not receiving but..

From: Klarsen <k5di@acca.nmsu.edu>
Date: Sat, 17 Dec 1994 13:36:26 -0700 (MST)
To: Sig Networking <netsig@tapr.org>
Cc: TAPR BBS Sig <bbssig@tapr.org>
Message-ID: <Pine.SUN.3.91.941217133257.17278A-100000@kazak>
Rendered body type: text/plain

For some reason tapr has seen fit to stop sending me the SIG's I
have enjoyed this year, but no problem. It's Christmas Time and what me
worry? Never happen!



134. Back working ...

From: Klarsen <k5di@acca.nmsu.edu>
Date: Sat, 17 Dec 1994 13:57:34 -0700 (MST)
To: Sig Networking <netsig@tapr.org>
Cc: TAPR BBS Sig <bbssig@tapr.org>
Message-ID: <Pine.SUN.3.91.941217135448.17471A-100000@kazak>
Rendered body type: text/plain

My .signaure for the season seems to have triggered a problem. I
will study the problem.
        I re-joined the tapr sig's and that appears to have worked...

73, karl k5di

135. NCPA's 2400 MHz NPRM comment

From: bruce@pixar.com (Bruce Perens)
Date: Sat, 17 Dec 94 13:01 PST
To: netsig@tapr.org
Message-ID: <m0rJ6G7-0006USC@mongo.pixar.com>
Rendered body type: text/plain

This is the comment I filed for NCPA. It's the first one of these
that I've written. I plan to file the material in paragraphs 5a-5i
a second time in a separate petition, since it's outside the scope
of the NPRM.

        Bruce Perens AB6YM

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Allocation of Spectrum Below 5 GHz Transferred from Federal Government Use	)	ET Docket No. 94-32

COMMENT OF THE NORTHERN CALIFORNIA PACKET ASSOCIATION

Submitted by: Bruce Perens
Northern California Packet Association
c/o Pixar
1001 W. Cutting Blvd. Suite 200
Richmond, CA 94804
510-215-3502
Internet: Bruce@Pixar.com

Date of Submission: December 19, 1994

I. INTRODUCTION

1. Northern California Packet Association represents Radio Amateur packet radio operators in the Northern California area.

2. This response to FCC 94-272 (docket 94-32) contests assumptions made by Department of Commerce and FCC regarding the prospective impact upon the Amateur Radio Service of the reallocation of the 2390-2400 and 2402-2417 MHz bands from Government to the private sector.

3. In addition, we present regulatory impediments that to date have hindered utilization of the 2390-2417 MHz frequency band by Radio Amateurs for experimentation in digital computer networking technology. Utilization of this band by radio amateurs for digital networking would have been much greater but for these regulatory impediments. Thus, we submit that current assumptions of low use of this band by Radio Amateurs are more a gauge of the effectiveness of over-government in depressing spectrum use than they are estimates of the potential for spectrum use by Radio Amateurs.

4. We propose changes that could be made to permit Radio Amateurs to be more effective contributors to the continued growth and development of advanced communications and technologies and in education, thus creating new high technology jobs and economic growth.

5. We consider the prospective favorable economic impact of a higher priority for Education as a frequency user, and the mission that Amateur Radio could perform in education.

6. We point out an area of the spectrum where unused frequencies are avialable.

7. We comment on the need for Amateurs to have primary allocation or equal status with other services in the bands that they are allocated, and point out current problems that have locked Amateurs and Part-15 users out of 902-928 MHz in some urban areas.

II. BACKGROUND

1. FCC proposes to re-allocate two band segments: 2390-2400 MHz and 2402-2417 MHz.

2. Currently, 2390-2400 MHz is allocated on a primary basis to Government use, and on a secondary basis to Radio Amateurs. FCC proposes to transfer primary allocation of 2390-2400 MHz to private sector uses. This transfer may remove the secondary allocation to the Amateur Service, may reduce access to the band to Amateur operations because of the need to protect a new primary user from interference,

or may make the allocation to the Amateur Service less useful due to an increase in harmful interference that must be tolerated by Amateurs.

3. The real primary users of 2400-2450 MHz are millions of microwave ovens that are permitted to operate in the 2400-2500 MHz Industrial, Scientific, and Medical (ISM) band. On paper, the 2400-2450 MHz band is allocated on a primary basis to government, and on a secondary basis to Radio Amateurs. However, both Government and Amateurs must accept harmful interference from ISM devices. The leakage limits on home microwave ovens prevent physical injury from their emissions, but these limits allow more than enough emissions to make the ovens powerful jammers of communications.

4. 2400-2483.5 MHz is also authorized for use by Part-15 (license free) devices. While these devices are required to protect Radio Amateurs from harmful interference, the reality is that protection of Radio Amateurs from Part-15 devices is rarely enforced. Commercial forces rather than the policy of FCC prevent this enforcement: if an Amateur and a Part-15 commercial installation are in conflict at a site such as a shared antenna tower or an urban building, the site's landlord will generally evict the Amateur rather than lose the business of the Part-15 commercial user. FCC's depleted enforcement budget also contributes to a lack of protection of Amateurs from Part-15 devices.

5. FCC proposes to transfer primary allocation of 2402-2417 MHz from government to private sector uses. This transfer may remove the secondary allocation to the Amateur Service, may reduce availability of the band to Amateur operations because of the need to protect a new primary user from interference, or may make the allocation to the Amateur Service less useful due to an increase in harmful interference that must be tolerated by Amateurs.

III. DISCUSSION

1. The conflicting authorizations in the 2400-2450 MHz band make it impractical for use by Radio Amateurs in digital networking over land paths of 5-50 miles where interfering devices may be in the path between two stations. 2400-2450 is still useful for space-to-ground communications, because highly directional antennas can be used to eliminate interference from ground-based devices. 2400-2450 is also still useful for very-short-range communications such as building-wide networks of Part-15 or Amateur devices, where interference can be surmounted by increased signal strength.

2. The conflicting authorizations in 2400-2450 MHz make 2390-2400 MHz the only practical band-segment for networking over land paths of 5-50 miles. Thus, FCC and Department of Commerce should consider that the availability of the 2390-2400 MHz band in its presently "quieter" state has a significantly greater impact for Radio Amateurs than the availability of an equal-sized sub-band of 2402-2450 MHz.

3. FCC and Department of Commerce erred when they assumed that the remaining band segments of 2400-2402 and 2417-2450 MHz would be sufficient for Amateur use. Their error was that they did not take into account that the conflicting authorizations in these band segments make them impractical for communications over land paths of 5-50 miles because of the potential for interfering devices to lie in the path between two stations. The assumption might have been correct if the only Amateur uses for this band were space-to-ground and very-short-range communications.

4. FCC and Department of Commerce have requested information on present and predicted occupancy of 2300-2310 MHz, 2390-2400 MHz, and 2402-2417 MHz by Radio Amateurs. The primary use we see for these band segments is digital computer networking. We observe that current regulation (certain elements of Part 97) has a depressing effect on the use of digital computer networking by Radio Amateurs. Relief from this regulation would result in greatly increased utilization of digital networking, and thus of the band segments under discussion, by Radio Amateurs. Thus, we question the utility of surveys of present and future occupancy that do not take into account the potential of increased utilization of the Amateur Service due to changes in regulation.

5. To support our argument, we shall go over elements of Part 97 that we propose could be changed to encourage use of digital computer

networking by Radio Amateurs, and would thus remove factors that currently depress utilization of the 2390-2450 MHz band. We propose that increased involvement of Radio Amateurs in digital computer networking would have a positive impact on the United States economy because it would encourage development of new software and algorithms for computer networking, and would facilitate education in all technologies that are used in implementing and operating computer networks. We understand that the Commission may see this material as outside the scope of the NPRM, and may prefer for these proposals to be presented in a different form before they are considered. If that is the case, we request that they be considered at present only for their prospective impact on the increase of Radio Amateur utilization the 2300-2450 MHz frequency spectrum.

5a. 97.111(5) prohibits Radio Amateurs from carrying out "Communications, on a regular basis, which could reasonably be furnished alternatively through other radio services". We submit that this restriction is so broad that it could be interpreted as a ban upon an Amateur Radio digital communications network in the presence of other wireless networks, even networks of Part-15 devices. We surmise that this restriction may have been designed to protect a regulated monopoly that no longer exists.

5b. 97.111(6) prohibits broadcasting in general, and allows broadcasting of information that is of interest only to Radio Amateurs. We observe that a major mode of discussion on digital computer networks such as the Internet is called "Usenet", "Net-News" or the computer "bulletin board". Net-News and bulletin board discussions take the form of a broadcast message posted by one of the participants, after which other participants respond to the message by posting broadcast messages that continue the thread of argument on the same topic. While the messages are broadcast, they implement a round-table discussion. We submit that in the case of digital computer networks, broadcasting or not broadcasting is a technical communications protocol choice and does not have the same meaning that it has for broadcast voice communications. We request that FCC allow any subject that could be legally discussed without broadcasting to be discussed via a broadcast communications protocol on an Amateur Radio digital computer network.

5c. We ask FCC to recognize that a primary role of stations in a digital computer network is to move third-party information automatically. Much of the restriction that currently hampers the deployment of Amateur Radio digital computer networks is related to third-party messages and automatic operation while such messages are carried.

5d. 97.115(2) prohibits carriage of messages for a third party in another country unless that country has signed a third-party treaty with the United States. We request that FCC treat automatic digital message forwarding between UHF-band Amateur stations within the borders of the United States as domestic communications. We observe that third-party communications from nations with which no third-party treaty exists can enter the United States via another communications service than Amateur Radio, such as the Internet. We observe that there is no such third-party limitation on domestic services such as Cellular Radio Telephone, and that the Internet (the international network in which the National Information Infrastructure is our domestic component) has no prohibition upon communications between nations enforced upon it at all. We surmise that these third-party regulations were drafted to regulate short-wave communications of international range, not UHF domestic communications between two computers in a network, and that they were drafted in a vastly different technological and political climate than today. We understand that international treaties that are difficult to change are involved, and thus request that FCC work out a means of permitting these third-party communications to be transmitted between domestic amateur stations in a UHF digital network once the messages have already entered the United States. We currently find it very difficult, in the context of border-free international networks such as the Internet, to operate the domestic Amateur Radio computer network as if certain nations did not exist.

5e. 97.109(e) requires the AX.25 protocol for automatic control of a station while transmitting third-party communications. This requirement has the unfortunate effect of prohibiting Radio Amateurs from converting surplus commercial radio data transceivers for use in an automatic-forwarding network, since such equipment is based on microcontroller firmware that rarely implements the

AX.25 protocol. In theory, the firmware program of the equipment could be re-written to use AX.25. In practice, this is almost never possible due to the in-availability of the source code for modification by Radio Amateurs, or the storage of the firmware in such a way that it can not be modified without destroying the equipment. We observe that the AX.25 standard specified was designed in the early eighties, and the last version was released in 1984. It is now quite antique by the standards of computer software. We understand that this regulation was to make it possible for FCC to monitor Amateur Radio digital communications at a time when FCC owned little equipment for doing so. We urge the FCC to provide for the use of generally accepted computer networking protocols. For example, the protocols released by the Internet Engineering Task Force (the engineers of the National Information Infrastructure) should be allowed for use in automatic forwarding via Amateur Radio. Other protocols should be allowed as well. We suggest that FCC require only that the protocol provide for unambiguous identification of the communicating stations and the communications protocol, and that the details of any protocol be filed with FCC before that protocol may be used for automatic third-party forwarding.

5f. 97.311 restricts the modulation method of a station transmitting spread-spectrum emissions to a very few simple forms. This requirement has the unfortunate effect of prohibiting Radio Amateurs from converting surplus commercial spread spectrum radio modems for use on Amateur Radio, since it is very unlikely that those modems could be programmed to use one of the few spreading protocols that FCC allows Radio Amateurs. It also has the effect of banning experimental research on new spread-spectrum techniques by Radio Amateurs, who could potentially contribute much new art in this area. We understand that this regulation was to make it possible for FCC and other government agencies to monitor spread-spectrum communications at a time when they owned little equipment for doing so. We surmise that this regulation could also have been influenced by cold-war national security considerations that may no longer apply. Many of us have purchased surplus Part-15 spread-spectrum radio modems that we would convert to Amateur use if we were permitted to use the spreading schemes of those modems on the Amateur bands. We suggest that FCC require only that the details of the protocol be filed with FCC before that protocol may be used, and that a station keep accurate logs of the spreading protocols used and the dates upon which use of those protocols was initiated and terminated.

5g. 97.1(b) states one of the purposes of the Amateur Radio Service is "Continuation and extension of the amateur's proven ability to contribute to the advancement of the radio art." Since much of what the Radio Amateur has to contribute today is Computer Science (in the form of software and algorithms for digital computer networking), we ask that FCC make it easier for us to justify the mission of Amateur Radio digital computer networks by substituting the more general word "technology" for "radio art" in 97.1(b).

5h. 97.1(d) states one of the purposes of the Amateur Radio Service is "Expansion of the existing reservoir within the amateur community of trained operators, technicians, and electronics experts." So that we can more easily justify the mission of Amateur Radio digital computer networks, we ask that the more general language "experts in science and technology" could be substituted for "technicians and electronics experts" in 97.1(d). Again, this more general language would include the field of Computer Science.

5i. We request an explicit statement in 97.1 of Amateur Radio's mission in education, and its mission to encourage young people to explore careers in science and technology. We submit that this is one of the primary missions of Amateur Radio digital computer networking as well as Amateur Radio as a whole, and a mission of tremendous economic value to the United States.

6. If the changes in 5a through 5i (above) were enacted, we would see an increase in the use of Amateur Radio for digital computer networking, a corresponding increase in experimentation and software development for digital computer networking by Radio Amateurs, and an increase in the utilization of amateur UHF spectrum for digital computer networking. Since software development is one of the technologies where individuals working in their spare time without the backing of large laboratories can still make a large contribution, this would result in increased growth and development

of advanced digital computer networking technology, thereby creating new high technology jobs and economic growth. We'd also like to point out that increased involvement by Radio Amateurs in digital computer networking would lead to increased educational opportunities for young people in these technologies.

7. The reason proposed for the transfer of this spectrum from Government to the private sector is economic benefit. We observe that the NPRM makes little mention of the potential for Education to be allocated a higher priority as a spectrum user. We suggest that a higher priority for Education would result in a larger, longer-term and more sustained economic benefit than the short-term benefit of funds from a frequency auction and employment of the frequencies for such cost-shaving optimizations as the replacement of copper local loops for "land-line" telephone companies. If the United States is to maintain its economic competitiveness, it needs to encourage more students to go into careers in science and technology. We suggest that the Amateur Radio service is an ideal vehicle for employment of this spectrum in education. There is considerable evidence for the role of Amateur Radio in a student's choice to make a career as a scientist or engineer. In addition, the accessibility of Amateur Radio to students should be considered: In any networking environment except for the Amateur service, equipment such as a network gateway would be kept locked away in a computer room and tended only by professional computer system administrators. In an Amateur Radio network, anyone can operate a network gateway that is available to a large user community, and thus anyone can learn about one. The same goes for networking hardware - only in the amateur service is a student not limited to extremely low power or pre-built type-approved equipment. An Amateur Radio network is also more permissive of applications that could be too expensive for a student to carry out on a commercial network, or could be disallowed by a commercial network operator.

8. If FCC and Department of Commerce are still looking for spectrum, we suggest they consider the extremely low utilization of the UHF television channels. Part of the reason for this low utilization is that the mission of these channels has been usurped by cable and by direct satellite broadcasting. Another reason is that until recently, poor implementation of receiver tuners prohibited the allocation of stations in an urban area with less than five channels of separation from each other. Rather than a broad transfer in allocation, we suggest that other services than television be granted access to currently-unallocated UHF television channels on a region-by-region basis.

9. A secondary allocation for the Amateur service is sometimes little better than no allocation at all. As an example of this, we offer a current unfortunate situation of Amateurs being overly restricted by the primary user in another band. Amateurs and users of Part-15 equipment are being locked out of the 902-928 band in urban areas by the primary user, the Automatic Vehicle Monitoring service. We observe that the technology of differential global positioning system receivers and the cellular telephone network has obsoleted the technology used by AVM. However, AVM operators persist in restricting Amateur operations to two 1 MHz sub-bands at the band-edge or even no operation at all. AVM operators severely restrict or attempt to make a total prohibition on operation of Part-15 devices within their shared spectrum. Education was to be a large user of Part-15 and Amateur devices in the 902-928 band, but is being restricted from these uses in the urban areas where they are most needed. We do not wish to see this same situation take place in the 2300-2450 MHz bands. We plead with FCC to look to the needs of Educational users in the 902-928 and 2300-2450 MHz bands.

* * *

--
Bruce Perens AB6YM
Voice phone: 510-215-3502 Internet: Bruce@Pixar.com
Amateur Radio TCP/IP: Bruce@ab6ym.ampr.org
Amateur Radio BBS network: ab6ym@n0ary.#nocal.ca.usa.noam

136. Node Power-fail

From: rmackay@bud.peinet.pe.ca (Ron VE1AIC)
Date: Sat, 17 Dec 1994 17:45:43 -0400
To: netsig@tapr.org
Message-ID: <9412172145.AA08994@bud.peinet.pe.ca>
Rendered body type: text/plain

A few times lately we have had power supply failures at our nodes sites.
(Blown ac/dc fuses)
These sites have battery back-up and continue to run for a day or more on
the batteries..until they finally drop out.
The problem is we have no way of knowing the nodes are on batteries
and in need of attention. We have considered various ideas on signalling
such a condition but I wonder if anyone has actually done something about
this? We are running X1J and TheNet 2.08B software.

73 - Ron
ve1aic@ve1aic.pe.can.noam

137. Re: [NETSIG:515] Not receiving but..

From: Greg Jones <gjones@tenet.edu>
Date: Sat, 17 Dec 1994 15:50:52 -0600 (CST)
To: netsig@tapr.org
Cc: k5di@kazak.NMSU.Edu
Message-ID: <199412172150.PAA02114@Gayle-Gaston.tenet.edu>
Rendered body type: text/plain

Karl - we are looking into the problem.

I have been sick and had finals -- so things sometime don't get handled over
night :-)

Obviously this must be a conspiracy.

Merry Xmas everyone - Greg

According to Klarsen:
>
>
> =09For some reason tapr has seen fit to stop sending me the SIG's I=20
> have enjoyed this year, but no problem. It's Christmas Time and what me=20
> worry? Never happen!
>
>
>

138. Re: [NETSIG:519] Re: Not receiving but..

From: rmackay@bud.peinet.pe.ca (Ron VE1AIC)
Date: Sat, 17 Dec 1994 18:45:15 -0400
To: netsig@tapr.org
Message-ID: <9412172245.AA12274@bud.peinet.pe.ca>
Rendered body type: text/plain

>
>I have been sick and had finals -- so things sometime don't get handled over
>night :-)
>
>Obviously this must be a conspiracy.
>
>Merry Xmas everyone - Greg
>
>
Gee Greg, you mean running this SIG ISN'T the most important thing
in your life? I'm sure that most of us appreciate the fact that Ham Radio
(and such things related to) is just a Hobby.
All things in proper perspective.
Thanks Greg for your prompt attention to Queries (and complaints).

Merry Christmas to All
- Ron
ve1aic@ve1aic.pe.can.noam

139. Re: [NETSIG:496] The future of packet networks and value of TCP/IP

From: Doug Holcombe <holcombe@mc.edu>
Date: Sat, 17 Dec 1994 18:47:54 +0600 (CST)
To: netsig@tapr.org
Message-ID: <Pine.3.05.9412171852.A28691-b100000@csc.mc.edu>
Rendered body type: text/plain

On Thu, 15 Dec 1994, Andrew J. Lynch wrote:

> INTERNET
>
> Yes, the mighty TCP/IP based internet is rolling toward us and swallowing up
> networks by the score every day. It has made many things in its path
> obsolete and crushed many an obscure, if technically superior, networking
> protocol.

Gulp! I think we just went down!

> By creating as much TCP/IP based packet networking as possible now, we will
> hasten the day when sending email to others across the globe through your HT
> is as easy as using the local repeater.

I wish! but it will take a long time for this to come about, well at least
around where I live.

}stuff deleted

>
> Ham radio in general is in very serious trouble if it does not act on this
> and get in front while it still can. The pressure from commercial firms to
> access more bandwidth to add to wireless networking and cell phones is
> already consuming the GHz+ bands. I believe it is inevitable that they will
> start looking to lower frequencies (1-999 MHz) for more when GHz+ gets
> crowded.

I to feel the same way! I keep telling people around here in Mississippi
that we need to keep up with the technology or we WILL! be left behind.
I'm doing my part by learning and playing with xNOS and my TNC's. I'm
also just a no code tech. and don't care to go on HF!

> If ham radio degenerates into a collection of anachronists using obsolete
> technology and obscure modes, it will fade into the mists as its aging
> operators become "silent keys".

Yes very much so!
I want my VHF!

>
> TCP/IP represents internet and internet is the future.
>
> 73
>
> Andrew Lynch, N8VEM
>
> alynch@wpgate1.wpafb.af.mil
> Use Proportional Font: true
> Attachment Count: 0

Doug Holcombe, KB5YZI inet: holcombe@mc.edu
Mississippi College (601)894-5210
Clinton, MS 39058

140. Re: [NETSIG:519] Re: Not receiving but..

From: Tim Baggett <tim@nmsu.edu>
Date: Sat, 17 Dec 1994 18:54:16 -0700 (MST)
To: netsig@tapr.org
Message-ID: <Pine.3.87.9412171816.B12181-0100000@wilma>
Rendered body type: text/plain

On Sat, 17 Dec 1994, Greg Jones wrote:

> I have been sick and had finals -- so things sometime don't get handled over
> night :-)

Boy, you aint a kidding! I been there before. Right now I'm going to
attempt catching up on the last 2 weeks of sleep I lost. Nahhh.....Got
the graduation party to attend! (damn, another 2 hours of sleep type
night - when's it end?)

> Obviously this must be a conspiracy.

Why else would they wait until Friday at 3PM before graduation to give a
final exam????

73
Tim

141. Re: [NETSIG:502] Re: Looking for information.

From: makinc@hhcs.gov.au (Carl Makin)
Date: Mon, 19 Dec 1994 09:10:30 +1100
To: netsig@tapr.org
Message-ID: <199412182242.JAA18856@sserve.cc.adfa.oz.au>
Rendered body type: text/plain

At 6:33 AM 16/12/94 -0600, tmoulton@ram.net wrote:

> The multi-cast feature that I am working on will allow subnets to broadcast
> their routing information to each other via ARP UI frames, so the various
> subnets will learn which ROSE address what which IP stations.

Will it require "digipeater" information to be held by the NOS station to
access remote nodes? I can't see how you are going to propogate ARP
queries. Unless you automatically propogate ARP queries then both ends of
the link will have to hardcode an AX.25/ROSE route. You're taking routing
away from IP where there are some tools for automating it and placing it
where long distance routes will have to manually hardcoded at TWO places
(at the IP and AX.25 levels).

If you *really* want to support IP then build a simple IP router into ROSE.
Make it a "rose application" if you like but as long as it supports
classless routing and ARP it would be *very* usefull.

Carl.

--
Carl Makin (VK1KCM)   "Speaking for myself only!"
makinc@hhcs.gov.au   'Work +61 6 289 8443'   Canberra, Australia
'The entire concept of daylight savings time is like trying to make
 yourself taller by cutting off your head and standing on it.' - Usenet Oracle

142. Re: [NETSIG:503] Re: Looking for information.

From: makinc@hhcs.gov.au (Carl Makin)
Date: Mon, 19 Dec 1994 09:47:08 +1100
To: netsig@tapr.org
Message-ID: <199412182316.KAA21520@sserve.cc.adfa.oz.au>
Rendered body type: text/plain

At 7:53 AM 16/12/94 -0600, Murphree Michael A wrote:

> If you can't integrate the AX.25 BBSes, Keyboarders, DX Cluster users, and
> maybe even APRS users ;^) into your approach, you will never gain adequate
> funding to build a network.

Agreed. I'm not advocating building an IP network and ignoring the
unwashed masses, however the ones that end up building the network are
usually the ones wanting to experiment. Why limit ourselves to the
expectations of Joe BBSUser when we can support him and our playtime as
well.

ROSE, Netrom (and from what I know of them Texnet and Flexnet) seems aimed
at Joe BBSUser. Any other usage is an add-on, an afterthought.
Functionally we're limiting ourselves to the dictates of a simple protocol
running on limited 10 year old hardware and the expectations of people who
still think morse is a neat idea. I think we can do better than that.

<soapbox mode off>

<whew>

Carl.

--
Carl Makin (VK1KCM)   "Speaking for myself only!"
makinc@hhcs.gov.au   'Work +61 6 289 8443'   Canberra, Australia
'The entire concept of daylight savings time is like trying to make
 yourself taller by cutting off your head and standing on it.' - Usenet Oracle

143. Re: [NETSIG:504] Keyboard to Keyboard obsolete?

From: makinc@hhcs.gov.au (Carl Makin)
Date: Mon, 19 Dec 1994 09:55:45 +1100
To: netsig@tapr.org
Message-ID: <199412182316.KAA21534@sserve.cc.adfa.oz.au>
Rendered body type: text/plain

At 11:06 AM 16/12/94 -0600, <mwhittin@pen.k12.va.us> wrote:

> I hear a lot of people saying that keyboard to keyboard packet
> is obsolete. If that's so, why do we even need to establish a
> real-time network accross the nation, or accross the world?

Keyboard-to-Keyboard is such a small percentage of packet activity that it might as well be obsolete. A Real-Time network has many more users than being just for keyboard-to-keyboard type chats. World Wide Web, Gopher, station control, Dx Clusters, and so on all benefit from Real-Time connectivity. There is no paradox between saying Keyboard chats are obsolete and wanting a real connectivity. It's just hilighting the fact that times change.

Carl.

--
Carl Makin (VK1KCM)   "Speaking for myself only!"
makinc@hhcs.gov.au   'Work +61 6 289 8443'   Canberra, Australia
'The entire concept of daylight savings time is like trying to make
 yourself taller by cutting off your head and standing on it.' - Usenet Oracle

144. Re: [NETSIG:524] Re: Looking for information.

From: Greg Jones <gjones@tenet.edu>
Date: Sun, 18 Dec 1994 17:40:12 -0600 (CST)
To: netsig@tapr.org
Message-ID: <199412182340.RAA00792@Joyce-Perkins.tenet.edu>
Rendered body type: text/plain

According to Carl Makin:
> ROSE, Netrom (and from what I know of them Texnet and Flexnet) seems aimed
> at Joe BBSUser. Any other usage is an add-on, an afterthought.
> Functionally we're limiting ourselves to the dictates of a simple protocol
> running on limited 10 year old hardware and the expectations of people who
> still think morse is a neat idea. I think we can do better than that.
>

If you don't make a network available for the unwash masses then in most cases you can;t get the support to afofrd to maintain the system. That is with systems that depend on local user support in order to provide nodes and operations and growth.

The key is to make the network operate in such a manner as to allow the high-end user (1%-2%) to keep having fun. Many of the current networks, as you mentioned, have been out grown by the 1% of networkers and high-end users that want to continue to experiment. This is why there are so many developmental, small networks around now.

Greg

Instr Technology / Dept of Curriculum and Instr / Univ of Texas / Austin
---
Work: (512) 471-5211 | Packet Radio BBS: WD5IVD @ N5LDD.#NTX.TX.USA.NA
Fax : (512) 794-5888 | InterNet: gjones@tenet.edu
---

145. Re: [NETSIG:526] Re: Looking for information.

From: wx3k@w2air.ampr.org (John Zantek)
Date: Sun, 18 Dec 1994 17:28:18 -0800
To: netsig@tapr.org
Message-ID: <9412190129.AA01857@iserver.tcpet.uscg.mil>
Rendered body type: text/plain

According to Greg Jones:
>According to Carl Makin:
>> ROSE, Netrom (and from what I know of them Texnet and Flexnet) seems aimed
>> at Joe BBSUser. Any other usage is an add-on, an afterthought.
>> Functionally we're limiting ourselves to the dictates of a simple protocol
>> running on limited 10 year old hardware and the expectations of people who

>> still think morse is a neat idea. I think we can do better than that.
>>
>
>If you don't make a network available for the unwash masses then in most
>cases you can;t get the support to afofrd to maintain the system. That is
>with systems that depend on local user support in order to provide nodes and
>operations and growth.
>
>The key is to make the network operate in such a manner as to allow the
>high-end user (1%-2%) to keep having fun. Many of the current networks, as
>you mentioned, have been out grown by the 1% of networkers and high-end users
>that want to continue to experiment. This is why there are so many
>developmental, small networks around now.
>

Allowing the high end user to have fun is chasing the bleeding edge of
technology, I'm afraid. In my limited packet experience, I find that the
high end users are rarely found building anything outside of their own
shacks. Until more people are ready to fund and support hardware
that's located beyond their own property lines, I doubt we'll see anything
beyond what's already deployed.

I take umbrage to the comments I read about the 'unwashed' who are
also cast aside with 'JoeBBS' and 'keyboarders'. Those same packeteers
are the folks I call USERS, for whom a network exists. I, for one, don't
like pursuing technology unless I can stay aligned with my customers and
offer improvements THEY want.

--
   ----------------------*
John Zantek WX3K	Internet: jzantek@tcpet.uscg.mil
[44.4.40.104]	Packet: WX3K@WX3K.#NOCAL.CA.USA.NOAM
Data 707 765 7016	Amprnet: wx3k@w2air.ampr.org
   ----------------------*
   | (WWW Home Page) http://wx3k.ampr.org/index.htm |
   --

146. Re: [NETSIG:524] Re: Looking for information.

From: ron@chaos.eng.wayne.edu (Ron Atkinson)
Date: Sun, 18 Dec 1994 21:07:54 -0500 (EST)
To: netsig@tapr.org
Message-ID: <9412190207.AA03058@chaos.NIS.chaos>
Rendered body type: text/plain

> At 7:53 AM 16/12/94 -0600, Murphree Michael A wrote:
>
> > If you can't integrate the AX.25 BBSes, Keyboarders, DX Cluster users, and
> > maybe even APRS users ;^) into your approach, you will never gain adequate
> > funding to build a network.
>
> Agreed. I'm not advocating building an IP network and ignoring the
> unwashed masses, however the ones that end up building the network are
> usually the ones wanting to experiment. Why limit ourselves to the
> expectations of Joe BBSUser when we can support him and our playtime as
> well.

Well in some areas just going off away from everyone else and putting up
your own network is the only way to get a network in place. We have
tried over and over and over again to get everyone to work together, and I
hate to rain on someones parade here but that just does not work, period.
It has finally gotten to the point here that it's ideal to put up your
own network thats designed to pass what you want to pass through it, and if
theres a bit of extra space you can let someone else hitch a ride. We
tried to get people to work together since packet has started, but a DX
cluster doesn't want to share a network with BBS's, BBS's don't want to
share with TCP/IP, TCP/IP doesn't want to share with AX.25 users, etc...
In the *real world* people don't get together to put up a network, a
network goes in to support what the people who put it together want to
pass through it. After it's up all you do is provide a gateway into
the other networks so people can communicate with each other. The Internet
is a perfect example of this.

Around my area the people with a common interest get together and POOF,
there's funding for a system that is capable of supporting what *we* want
it to do. Now we dont' lock people out or say they can't use it, anybody
can use it, but I certainly am not going to fund a system just so 'Joe Ham'
can keyboard to keyboard with someone or a BBS can forward it's mail, I'll
fund a system so myself and my friends that helped fund it can communcate

with each other and do what we want. Then afterwards everyone else can
use it. This is how *networks* get built, and if you really become honest
about it you'll realize that this is how they get built all over the
world too, especially in metropolitain areas. This also solves packet
wars between groups since each has their own network capable of passing
whatever traffic they see fit to send through it.

Also don't include thigns like "I run a BBS for the users", that's an
application and not a network routing switch and is entirely different.
Usually the people that put up the networks also just happen to run
BBS's and TCP/IP systems with local LAN's on them. This is the
entry port. People around here dont' complain that noone is putting up
anything for them because when a switch or link its put in there is
always some kind of open application that allows the user to enter the
network. For some reason hams think that their home systems must be on
backbone links and they need access to it. Try to tell your boss or
school that you want *your* computer on the main backbone for your Internet
connection and not on your local LAN which is most cases is relying on a
gateway computer that is someones Sun SPARC sitting on his desk for his
work.   Hams that put up networks will also put up local access ports too
and people have to learn to trust them and use them, not try to argue that
they want direct access to a switch, real networks dont' operate that way
and neither do we.

--

Ron Atkinson N8FOW

AMPRnet : n8fow@n8fow.ampr.org
Internet : ron@chaos.eng.wayne.edu
           aa011@detroit.freenet.org

147. Re: [NETSIG:527] Re: Looking for information.

From: Barry McLarnon VE3JF <bm@hydra.carleton.ca>
Date: Sun, 18 Dec 1994 23:12:53 -0500 (EST)
To: netsig@tapr.org
Message-ID: <199412190412.XAA14172@hydra.carleton.ca>
Rendered body type: text/plain

> >> ROSE, Netrom (and from what I know of them Texnet and Flexnet) seems aimed
> >> at Joe BBSUser. Any other usage is an add-on, an afterthought.
> >> Functionally we're limiting ourselves to the dictates of a simple protocol
> >> running on limited 10 year old hardware and the expectations of people who
> >> still think morse is a neat idea. I think we can do better than that.
> >>
> >
> >If you don't make a network available for the unwash masses then in most
> >cases you can;t get the support to afofrd to maintain the system. That is
> >with systems that depend on local user support in order to provide nodes and
> >operations and growth.
> >
> >The key is to make the network operate in such a manner as to allow the
> >high-end user (1%-2%) to keep having fun. Many of the current networks, as
> >you mentioned, have been out grown by the 1% of networkers and high-end users
> >that want to continue to experiment. This is why there are so many
> >developmental, small networks around now.
> >
>
> Allowing the high end user to have fun is chasing the bleeding edge of
> technology, I'm afraid. In my limited packet experience, I find that the
> high end users are rarely found building anything outside of their own
> shacks. Until more people are ready to fund and support hardware
> that's located beyond their own property lines, I doubt we'll see anything
> beyond what's already deployed.

Time for a counterexample. In this area, the so-called 'high-end' users
have funded, built and maintained most of the local network facilities.
Besides which, people's shacks can be an excellent place to put network
nodes. Around here, it works like this: a user goes 'high-end' and
upgrades to 56kb/s, and he then uses his old low-speed equipment to put
an network access port up for users in his local area, or in some cases
to run a backbone link to an outlying area. The high-end users have
their 56kb to play with, but other users around them get a piece of the
action, gratis. The high-end folks are the ones running most of the
bbs's and other services, too. This is basically a cellular system, with
a high-speed central full-duplex repeater to tie the cells together... you
also need some lower-speed repeaters to fill in the coverage gaps between
the cells. The network nodes then end up in locations where they are
readily accessible and easily maintained, and can run on more powerful

hardware than TNCs. It works here... why not elsewhere?

> I take umbrage to the comments I read about the 'unwashed' who are
> also cast aside with 'JoeBBS' and 'keyboarders'. Those same packeteers
> are the folks I call USERS, for whom a network exists. I, for one, don't
> like pursuing technology unless I can stay aligned with my customers and
> offer improvements THEY want.

But as one of the network builders, you also have to provide some
leadership. You can stay mired in 10-year-old technology and applications,
or you can show the users something new, and sit back and see what happens.
I get tons of questions from local users, and that provides a pretty good
reading of where their interests lie... the vast majority are about
Internet mail, Internet gateway access, running NOS, running Linux,
using winsock apps over the air, upgrading to higher speed, using the
convers servers, etc... very few are about keyboard-keyboard 'qsos', pbbs
use, node hopping, and the other stuff we all used to do back in the 80's
(and I do still run a pbbs, and am readily accessible to the 'unwashed' :-).

I'm not trying to hold the Ottawa network up as a shining example, but I
think our experience provides some insight into what the users in your
area *will* be looking for, if they aren't already...

>   *--------------------*---------------------------------------*
> | John Zantek WX3K | Internet: jzantek@tcpet.uscg.mil |
>   *---*

Barry

--
  Barry McLarnon VE3JF/VA3TCP | Internet: bm@hydra.carleton.ca
  Ottawa Amateur Radio Club | AMPRnet: barry@va3tcp.ampr.org
  Packet Working Group | FreeNet: aa187@freenet.carleton.ca

148. Re: [NETSIG:525] Re: Keyboard to Keyboard obsolete?

From: mwhittin@pen.k12.va.us (Mark Christopher Whittington)
Date: Mon, 19 Dec 94 0:18:41 EST
To: netsig@tapr.org
Message-ID: <9412190518.AA29125@pen1.pen.k12.va.us>
Rendered body type: text/plain

According to Carl Makin:

> Keyboard-to-Keyboard is such a small percentage of packet activity that it
> might as well be obsolete. A Real-Time network has many more users than

However, if you do not support keyboard-to-keyboard in any
future network, you are depriving those who DO wish to use key
to key. And what it seems to me is that people are trying to
justify removing support from future networks because it's not
a "large percentage of packet activity", but it is a method of
communication many people enjoy. I enjoy key to key, but I
also like BBS's and TCP/IP aplications. One reason I do not go
key to key more often is because everyone around here seems to
think it's "evil" or taboo or something, and that's the image
that most people around here propagate!

73
Mark, KE4MAA

--
                              _\\|//_
                             (` 0-0 ')
============================o00==(_)==00o=====================================
Mark Whittington | Co-SysOp, Outpost XIO BBS
Amateur Radio Operator KE4MAA, Tech. | Hampton, VA
mwhittin@pen.k12.va.us Internet | (804)850-0909
KE4MAA@N4HOG.VA.USA.NOAM AX.25 | Sysop: John Winsley
Power through Knowledge | FREE VALIDATION FIRST CALL!
==

149. Re: [NETSIG:523] Re: Looking for information.

From: tmoulton@ram.net
Date: Mon, 19 Dec 94 10:09:39 EST
To: netsig@tapr.org
Message-ID: <05987.15021573@RAMail>
Rendered body type: text/plain

>
>> The multi-cast feature that I am working on will allow subnets to broadcas
>t
>> their routing information to each other via ARP UI frames, so the various
>> subnets will learn which ROSE address what which IP stations.
>
>Will it require "digipeater" information to be held by the NOS station to
>access remote nodes? I can't see how you are going to propogate ARP
>queries. Unless you automatically propogate ARP queries then both ends of

The digipeater info that will be retained will be that that was learned from
hearing ARP frames.

The ARP frames will be sent to all user channels that are configured in the
ARP broadcast group, defined in the ROSE switch configuration.

>the link will have to hardcode an AX.25/ROSE route. You're taking routing
>away from IP where there are some tools for automating it and placing it
>where long distance routes will have to manually hardcoded at TWO places
>(at the IP and AX.25 levels).

The whole idea is to not hard code anything.

>
>If you *really* want to support IP then build a simple IP router into ROSE.
>Make it a "rose application" if you like but as long as it supports
>classless routing and ARP it would be *very* usefull.
>

i would consider that, but if ROSE can make a nation wide network appear
as if it were dumb digipeaters, why not let the user station, or the regional
ip gateway handle the routing functions?

>
>Carl.
>

____
Thomas A. Moulton, W2VY
w2vy@ram.net

150. Re: [NETSIG:524] Re: Looking for information.

From: tmoulton@ram.net
Date: Mon, 19 Dec 94 10:28:27 EST
To: netsig@tapr.org
Message-ID: <05988.15021573@RAMail>
Rendered body type: text/plain

>ROSE, Netrom (and from what I know of them Texnet and Flexnet) seems aimed
>at Joe BBSUser. Any other usage is an add-on, an afterthought.

ROSE has been designed from the start to provide full AX.25 connectivity,
without repsect to the upper layer protocol being used.

This is proven by the fact that ROSE passes ALL AX.25 PID's and right now
I'm working on supporting UI frames to complete the support and while I am
at it I want to support broadcasting, which can help IP as well as others.

Almost every feature in ROSE in generic for all protocols.

tom

151. Re: [NETSIG:530] Re: Keyboard to Keyboard obsolete?

From: tmoulton@ram.net
Date: Mon, 19 Dec 94 10:35:36 EST
To: netsig@tapr.org
Message-ID: <05989.15021573@RAMail>
Rendered body type: text/plain

>According to Carl Makin:
>
>> Keyboard-to-Keyboard is such a small percentage of packet activity that it
>> might as well be obsolete. A Real-Time network has many more users than
>
>think it's "evil" or taboo or something, and that's the image
>that most people around here propagate!

Keyboard to Keyboard died when you couldn't digipeat 100's of miles..

Give people a network where YOU CAN do it and you will see that they WILL!

73, tom

152. Re: [NETSIG:527] Re: Looking for information.

From: tmoulton@ram.net
Date: Mon, 19 Dec 94 11:13:56 EST
To: netsig@tapr.org
Message-ID: <05992.15021573@RAMail>
Rendered body type: text/plain

```
>   *--------------------*---------------------------------------*
>   |  John Zantek WX3K  | Internet: jzantek@tcpet.uscg.mil      |
>   |    [44.4.40.104]   |   Packet: WX3K@WX3K.#NOCAL.CA.USA.NOAM |
>   |  Data 707 765 7016 |  Amprnet: wx3k@w2air.ampr.org         |
>   *--------------------*---------------------------------------*
>   |       (WWW Home Page) http://wx3k.ampr.org/index.htm       |
>   *------------------------------------------------------------*
>
>
>
John, I think I was the first one (recently) to refer to us as the unwashed
since I don't run IP. I think most of us will agree that while I might be
unwashed (in some people's view) I AM working to advance the state of
networking in amateur radio.

73, tom
```

153. Re: [NETSIG:533] Re: Keyboard to Keyboard obsolete?

From: mwhittin@pen.k12.va.us (Mark Christopher Whittington)
Date: Mon, 19 Dec 94 11:30:21 EST
To: netsig@tapr.org
Message-ID: <9412191630.AA57955@pen1.pen.k12.va.us>
Rendered body type: text/plain

According to tmoulton@ram.net:

> Keyboard to Keyboard died when you couldn't digipeat 100's of miles..

I AGREE! 100%! People thought, "Network, gee, let's talk
halfway across the country!" Then it didn't happen, and the
people who run the nets discourage attempts to connect through
nodes for DX key to key contacts! So of course there isn't
much activity.

> Give people a network where YOU CAN do it and you will see that they WILL!

But most people designing networks don't think that there's a
reason to. So we need to find reasons to give them.

73
Mark

--

```
                              _\\|//_
                             (` 0-0 ')
============================o00==(_)==00o=====================================
Mark Whittington                       | Co-SysOp, Outpost XIO BBS
Amateur Radio Operator KE4MAA, Tech.   | Hampton, VA
mwhittin@pen.k12.va.us  Internet       | (804)850-0909
KE4MAA@N4HOG.VA.USA.NOAM AX.25         | Sysop: John Winsley
*Power through Knowledge*              | FREE VALIDATION FIRST CALL!
================================================================================
```

154. Re: [NETSIG:524] Re: Looking for information.

From: kb7uv@panix.com (Andrew Funk)
Date: Mon, 19 Dec 1994 11:50:37 -0500
To: netsig@tapr.org, netsig@tapr.org
Message-ID: <199412191650.AA26339@panix.com>
Rendered body type: text/plain

At 05:18 PM 12/18/94 CST, Carl Makin wrote:

>ROSE, Netrom (and from what I know of them Texnet and Flexnet) seems aimed
>at Joe BBSUser. Any other usage is an add-on, an afterthought.
>Functionally we're limiting ourselves to the dictates of a simple protocol
>running on limited 10 year old hardware and the expectations of people who
>still think morse is a neat idea. I think we can do better than that.

><soapbox mode off>

I can't speak for the other protocols, but ROSE was designed from the
beginning as X.25 for Amateur Radio, an ISO Level 3 "transperant data pipe".
The Z-80 TNC was chosen as the initial platform because of availability and
exisiting deployment, as well as the Z80's communications performance.

ROSE is designed to be a low-overhead, robust Level 3 over which any higher
layers may be run successfully.

Higher level protocols were *not* an afterthought.

73, Andy
--

  _________________ Andrew Funk, KB7UV _____________________
 | Tech Producer/Editor   Internet: kb7uv@panix.com |
 | WCBS-TV Channel 2 News   New York, NY USA |
 | --- INSERT COMMERCIAL HERE --- |

155. Re: [NETSIG:534] Re: Looking for information.

From: janderson@infotac
Date: Mon, 19 Dec 94 12:03:16 -0500
To: netsig@tapr.org
Message-ID: <15021591.110@infotac>
Rendered body type: text/plain

Please wait a moment

156. [NETSIG:511] Re: Keyboard to Keyboard obsolete?

From: steve.diggs@totrbbs.atl.ga.us (Steve Diggs)
Date: Tue, 19 Dec 94 10:37:00 -0500
To: netsig@tapr.org
Message-ID: <320.7.uupcb@totrbbs.atl.ga.us>
Rendered body type: text/plain

-> Reply-To: emory!tapr.org!netsig
-> From: wa4mei!emory!pen.k12.va.us!mwhittin (Mark Christopher
-> Whittington) To: netsig@tapr.org

-> 145.01 here in Virginia is a good example of that. I have
-> listened and heard packet after packet with no break in between for
-> over FIVE MINUTES! (I guess I'm one of those stupid
-> individuals who tries to be considerate, and operate software
-> CD and open squelch so I don't step on someone.)
->
-> > Perhaps we should ban mail forwarding except on point to point
-> links > specially designated for the purpose :-) ?
->
-> Seriously, that sounds like the best way to do it! :)

No doubt about it: automated mail forwarding on a user channel gets
everybody mad. We finally quit that about two years ago here in Atlanta.
Next step: get rid of digipeating on the part of system-operated nodes.
We are moving our nodes off of X1J and on to JNOS, when we add a 56kb
backbone port to our sites. When that step is taken, digipeating gets
turned OFF. (Don't need it any more). I mean...digipeating off of one
private station by another private station to temporarily bridge a weak
link is fine...but system-operated stations need to grow out of it.

Steve Diggs, KB4ZTN
East Atlanta LAN

Top Of The Rock BBS - Lilburn, GA   SYSOP: Steve Diggs
UUCP: totrbbs.atl.ga.us   Snailmail: 4181 Wash Lee Ct.
Phone: +1 404 921 8687   Lilburn, GA 30247-7407

157. Re: [NETSIG:533] Re: Keyboard to Keyboard obsolete?

From: wx3k@w2air.ampr.org (John Zantek)
Date: Mon, 19 Dec 1994 11:49:01 -0800
To: netsig@tapr.org
Message-ID: <9412191950.AA09619@iserver.tcpet.uscg.mil>
Rendered body type: text/plain

>>> Keyboard-to-Keyboard is such a small percentage of packet activity that it
>>> might as well be obsolete.

>Give people a network where YOU CAN do it and you will see that they WILL!

An excellent example of juxtaposition. Our packet 'network' is screaming
for customer/provider alignment. While I concur that we can't expect to do
business with the paradigm of a technology that's a decade old, our needs
still haven't changed. We should provide for the desires of anyone who
travels our highway as a radio amateur. Yes, we should provide for the
user who wants to run real-time Mosaic, but shouldn't forget that many
folks still want to call 'CQ'.

--


```
   *--------------------*----------------------------------------*
   |  John Zantek WX3K  | Internet: jzantek@tcpet.uscg.mil       |
   |    [44.4.40.104]   |   Packet: WX3K@WX3K.#NOCAL.CA.USA.NOAM |
   |  Data 707 765 7016 |  Amprnet: wx3k@w2air.ampr.org          |
   *--------------------*----------------------------------------*
   |       (WWW Home Page) http://wx3k.ampr.org/index.htm        |
   *------------------------------------------------------------*
```


158. Packet Radio Networks

From: janderson@ram.net
Date: Mon, 19 Dec 94 15:54:37 EST
To: netsig@tapr.org
Message-ID: <01934.15021591@RAMail>
Rendered body type: text/plain

As the originator of the now-infamous "Looking for information" thread, I want
to thank everyone who took the time to respond both here and to my personal
email address. This has been a fascinating thread to follow and I appreciate
all of the input given.

I wish to make a few observations based on the results of my question and the
results of informal discussions with local users and system operators, and I
invite further discussion.

Many feel that TCP/IP networks are the future for amateur packet radio
networks. I am intrigued about the possibilities of TCP/IP, but I'm not
convinced that the basic user network should be exclusively TCP/IP. I feel
strongly that the basic network should always support users running the most
simple of hardware configurations. This is necessary to continue supporting
some of the most basic "work" we do as hams. I don't want a network that
locks out the "keyboard to keyboard chat between two users running...dumb
terminals". I don't want a network that will make it impossible for the user
with a Model 100/TNC/radio portable packet station to respond to the local
hospital during a drill or an actual emergency and set up a packet link to the
county EOC. If I want to run mobile packet for an event or just for grins,
around home or in another area, I don't want to hassle with finding out where
a gateway is, or what I should to my TCP/IP address when I travel to another
area. To me, these are some of the real neat things about packet. If I feel
like it, I can connect my small TNC to an HP calculator and a handheld radio
and have a fully functional packet station, provided I have a convenient entry
point into the network.

TCP/IP has tremendous potential and may bring a lot of "nifty" applications
to the packet users. But let's not lock out the basic users in the process.
Let's not force them to find some local TCP/IP system running a gateway just
so they can get into the network. I know a lot of folks who use our
current network just to talk to TNC maildrops, sending messages back and
forth between friends. I know that some will never want to do anything more
than that, ever.

The TNC-Radio Node/Switch, regardless of the networking technology used, is
easy to build, easy to place at a typical radio site, and easy to equip with
standby power that can run the system for days or even weeks. Granted, the
technology is 10 years old, but we've seen some new TNC developments with high
speed, advanced CPUs, more memory and multiple ports, etc. This should help
maintain and improve overall network performance.

During a real emergency, do we want to rely on complicated gateways running on
PC's, many of which will rely on commercial power for their operation? Do we
want to rely on the users operating these gateways, who may become bored, fed
up, divorced, relocated, etc., thereby changing the topography of the network,
sometimes with little or no warning? What I need is a network that meets the
requirements of the TCP/IP users AND the basic, "dumb terminal" users. From
what I've see so far, a full blown dedicated TCP/IP network falls short of
this need, since the user must either run a full blown TCP/IP station or be
close enough to a gateway to get access. And who knows how he establishes a
"keyboard to keyboard" session to his buddy with a dumb terminal on the other
side of town once he finds a gateway he can use.

I think the answer might be some combination of a bit regenerator high-speed packet repeater linked to a node/switch. All users within range of the repeater hear each other without causing hidden transmitter problems. The bit regenerator is a dumb device, it just retransmits whatever it hears on the input. This is great for both the TCP/IP and "other" users. The stations within range of the bit regen repeater become a "lan". No NET/ROM, ROSE or KA-NODES would be needed (or wanted) on the repeater.

Attached directly to the repeater, and monitoring, would be a node or switch linking it to a wide area backbone, with other bit regen repeaters serving other LANS. So, if a user needs to establish a link outside of the LAN, they issue the appropriate command to the node/switch via the repeater. The node/switch establishes the connection to the other end. If the appropriate networking technology is used, "connections" by "basic" users, and TCP/IP frames could both be supported.

Since ROSE is designed to be a "designed" and "managed" network from the first day the first switch goes online, it is an attractive option for the backbone switching technology. From what I've heard, and seen firsthand, it looks like a ROSE network would be MUCH easier to maintain than a network based on TheNET/NETROM, etc. The planned UI application sounds like a reasonable accommodation for the TCP/IP crowd, allowing them to pass TCP/IP traffic transparently through the network. The UI application will also allow APRS stations to pump unproto posits into the network and have them pop out on the local APRS net frequency.

Not to say I haven't heard a few horror stories about ROSE. But, the favorable comments far outweigh the unfavorable. It seems that if ROSE is put up in a well planned and well managed environment, it works well. If it is shoved down the users' throats, they hate it no matter how well it works.

Comments?

Jack

n4uls@ram.net

159. Re: [NETSIG:539] Re: Keyboard to Keyboard obsolete?

From: Klarsen <k5di@acca.nmsu.edu>
Date: Mon, 19 Dec 1994 13:53:10 -0700 (MST)
To: netsig@tapr.org
Message-ID: <Pine.SUN.3.91.941219134224.10070A-100000@kazak>
Rendered body type: text/plain

I started out my packet radio life as a keyboard ham. I had a R/S model 1 with expantion card and later a real floppy drive! Then I got a Commador 64 and with a lot of trouble got my first taste of a packet bbs. It was fun and I did enjoy the fact that my words could be carried 100's of miles if I was happy with non-real-time. I learned about store and forward.

Since then I have had very few keyboard contacts and those were done by hams that got me to answer a call from my bbs. That is how it is and the keyboard is still being used but to call the local bbs or dx cluster.

73, and Happy Hollidays de karl

k5di

160. Re: [NETSIG:533] Re: Keyboard to Keyboard obsolete?

From: hank_oredson@MENTORG.COM (Hank Oredson)
Date: Mon, 19 Dec 94 11:25:56 PST
To: netsig@tapr.org
Message-ID: <9412191125.ZM6508@hanko>
Rendered body type: text/plain

On Dec 19, 9:45am, tmoulton@ram.net wrote:
> Subject: [NETSIG:533] Re: Keyboard to Keyboard obsolete?
> >According to Carl Makin:
> >
> >> Keyboard-to-Keyboard is such a small percentage of packet activity that it
> >> might as well be obsolete. A Real-Time network has many more users than
> >
> >think it's "evil" or taboo or something, and that's the image
> >that most people around here propagate!
>
> Keyboard to Keyboard died when you couldn't digipeat 100's of miles..
>

> Give people a network where YOU CAN do it and you will see that they WILL!

We have such a network here, and people do make good use of it
for keyboard conversations. There are many other applications
that are supported as services at various nodes. These are accessed
via keyboard connect to that node. Some are tcp/ip based, some are
NET/ROM based, some are accessed using ad hoc protocols.

Any future network must support these activities, in some manner or another.

   ... Hank

--

Hank Oredson @ Mentor Graphics   Library Operations
Internet   : hank_oredson@mentorg.com   "Parts 'R Us!"
Amateur Radio: W0RLI@W0RLI.OR.USA.NOAM

161. Proxim RF modem questions

From: bruce@pixar.com (Bruce Perens)
Date: Mon, 19 Dec 94 14:20 PST
To: netsig@tapr.org
Message-ID: <m0rJqRZ-00061sC@mongo.pixar.com>
Rendered body type: text/plain

I got a pair of Proxim RF modems, and have a few questions for others
here who already have them.

1. Can you tell if there is a UART, or is the 6502 is bit-banging the
   serial port?

2. Anyone try to dump the ROM code? I knew 6502 assembler 10 years ago.

3. Anyone work out a PC pattern for a board to provide voltage regulation
   and RS-232 conversion for these things?

4. Has anyone reverse-engineered the radios well enough to derive at
   least a block diagram?

        Thanks

        Bruce Perens

--
Bruce Perens AB6YM
Voice phone: 510-215-3502 Internet: Bruce@Pixar.com
Amateur Radio TCP/IP: Bruce@ab6ym.ampr.org
Amateur Radio BBS network: ab6ym@n0ary.#nocal.ca.usa.noam

162. Re: [NETSIG:543] Proxim RF modem questions

From: dkelly@tomcat1.tbe.com (David Kelly)
Date: Mon, 19 Dec 94 16:43:45 -0600
To: netsig@tapr.org
Message-ID: <9412192243.AA10535@tomcat1.tbe.com>
Rendered body type: text/plain

> 3. Anyone work out a PC pattern for a board to provide voltage regulation
>   and RS-232 conversion for these things?

I was working on one, have it roughed out but not verified. Was tossing
and turning, trying to decide how I wanted to handle the '232 control
lines. Finally decided to use a single MAX-232 for TxD, RxD, RTS, and CTS.
Then another for those who just have to have DTR & family. But then I
thought I'd rather mount the Proxim on the tower and run 150' cable to
it and RS-422 differential drive would be best....

I too was once a pretty good 6502 man. Still have my tools. I don't have
a PLCC adapter for the Proxim EPROM to read it into a file. Sincerly hope
they didn't use bit-banging as the 6502 would really require external timers
to make it work, and while you are at it might as well do an external UART.
The problem with bit-bangers is recovering the sender's clock in order to
accurately Rx the bits. I don't trust bit-bangers.

Looking at the design, and Proxim's willingness to buy custom ASICs, I'd bet
the original plan was to license the 6502 core and put it in one of the
chips. The 6502 is one of the most widely licensed ASIC CPU cores available,
possibly becuase of its small size.

Before spending much time disassembling the code, the first thing to do is
verify the EPROM to CPU interface. Its quite common to randomize the data
and address lines when one is sensitive about their design.

Keep me on your "Proxim Mailing List". Tell me the answers to my PCB delima
and I'll finish it this year.

73, David N4HHE
dkelly@nebula.tbe.com (if dkelly@tomcat1.tbe.com bounces)

163. Best Network TNC?

From: mmunster@qualcomm.com (Marvin Munster x5388)
Date: Mon, 19 Dec 1994 15:04:47 -0800
To: netsig@tapr.org
Message-ID: <ab1bc0d01b021004eb8c@[129.46.12.181]>
Rendered body type: text/plain

I don't want to start a war here, but if you had it to do all over again,
what TNC would be best to build a new network. I want to use one "brand" of
modem that will fit all applications.

        Considerations:

        X1J/2
        1200 user port
        9600 and up network
        Power sources
        Hill top operation (not in a house)
        Standardization
        (add your own here)

Thanks for your input and thoughts on the subject.

Marvin Munster, WB6PKK
mmunster@qualcomm.com

164. Re: [NETSIG:545] Best Network TNC?

From: dkelly@tomcat1.tbe.com (David Kelly)
Date: Mon, 19 Dec 94 17:46:13 -0600
To: netsig@tapr.org
Message-ID: <9412192346.AA11550@tomcat1.tbe.com>
Rendered body type: text/plain

> I don't want to start a war here, but if you had it to do all over again,
> what TNC would be best to build a new network. I want to use one "brand" of
> modem that will fit all applications.
>
>   Considerations:
>
>   X1J/2
>   1200 user port
>   9600 and up network
>   Power sources
>   Hill top operation (not in a house)
>   Standardization
>   (add your own here)
>
> Thanks for your input and thoughts on the subject.
>
> Marvin Munster, WB6PKK
> mmunster@qualcomm.com

Considering you didn't list cost as an objective, the "TNC-3" from
Germany based on a 68302, is probably the best platform to build from,
at least on paper. Considering the last I heard of it was in its
announcement in PSR it would be hard to consider "practical".

Sure would be nice to packet at data rates that would make a '302
work up a sweat.

David Kelly, N4HHE
dkelly@nebula.tbe.com (if dkelly@tomcat1.tbe.com bounces)

165. Re: [NETSIG:531] Re: Looking for information.

From: makinc@hhcs.gov.au (Carl Makin)
Date: Tue, 20 Dec 1994 09:44:30 +1100
To: netsig@tapr.org

Message-ID: <199412200013.LAA25996@sserve.cc.adfa.oz.au>
Rendered body type: text/plain

At 9:16 AM 19/12/94 -0600, tmoulton@ram.net wrote:

> The ARP frames will be sent to all user channels that are configured in the
> ARP broadcast group, defined in the ROSE switch configuration.

Ok, so you'll bridge ARP frames and rely on the AX.25 autoroute to specify
the return path. Well that should work. Will it be possible to specify
ARP broadcast groups based on subnet masks?

Carl.

--
Carl Makin (VK1KCM)   "Speaking for myself only!"
makinc@hhcs.gov.au   'Work +61 6 289 8443'   Canberra, Australia
'The entire concept of daylight savings time is like trying to make
 yourself taller by cutting off your head and standing on it.' - Usenet Oracle

166. Re: [NETSIG:540] Packet Radio Networks

From: makinc@hhcs.gov.au (Carl Makin)
Date: Tue, 20 Dec 1994 10:31:40 +1100
To: netsig@tapr.org
Message-ID: <199412200013.LAA26028@sserve.cc.adfa.oz.au>
Rendered body type: text/plain

At 2:59 PM 19/12/94 -0600, janderson@ram.net wrote:

> Many feel that TCP/IP networks are the future for amateur packet radio
> networks. I am intrigued about the possibilities of TCP/IP, but I'm not
> convinced that the basic user network should be exclusively TCP/IP. I feel
> strongly that the basic network should always support users running the most
> simple of hardware configurations. This is necessary to continue supporting

Yes it's necessary to continue to support the applications that our users
are using. That does not force us to provide that functionality in exactly
the same way though.

> During a real emergency, do we want to rely on complicated gateways running on
> PC's, many of which will rely on commercial power for their operation? Do we
> want to rely on the users operating these gateways, who may become bored, fed

The same considerations apply for any repeater site. There is no
difference between a well managed Rose node on a hill to a PC running Rose
on a hill to a PacketTen running TCP/IP and Netrom on the same hill. All
require support and all are complicated.

> Attached directly to the repeater, and monitoring, would be a node or switch
> linking it to a wide area backbone, with other bit regen repeaters serving

This is the ideal situation. It's certainly achievable and it totally
irrelevant to the debate on the what backbone protocols should be.

I, personally, see Rose, Netrom etc as dead ends as they only provide a
subset of the functionality required to fully support the information tools
being developed and in use today. The full functionality required is
available in TCP/IP which includes all the layer 3 services of Rose and
Netrom. Why duplicate those services?

Carl.

--
Carl Makin (VK1KCM)   "Speaking for myself only!"
makinc@hhcs.gov.au   'Work +61 6 289 8443'   Canberra, Australia
'The entire concept of daylight savings time is like trying to make
 yourself taller by cutting off your head and standing on it.' - Usenet Oracle

167. Re: [NETSIG:539] Re: Keyboard to Keyboard obsolete?

From: makinc@hhcs.gov.au (Carl Makin)
Date: Tue, 20 Dec 1994 10:06:41 +1100
To: netsig@tapr.org
Message-ID: <199412200013.LAA26013@sserve.cc.adfa.oz.au>
Rendered body type: text/plain

At 1:56 PM 19/12/94 -0600, <wx3k@w2air.ampr.org> wrote:

>>>> Keyboard-to-Keyboard is such a small percentage of packet activity that it
>>>> might as well be obsolete.

>> Give people a network where YOU CAN do it and you will see that they WILL!

> travels our highway as a radio amateur. Yes, we should provide for the
> user who wants to run real-time Mosaic, but shouldn't forget that many
> folks still want to call 'CQ'.

My point, which I think I made very badly :-(is that the kind of network
that can support World Wide Web use can easily take care of kbd-kbd chats.
Let's not limit ourselves to just doing the chat sessions.

However your point about

> An excellent example of juxtaposition. Our packet 'network' is screaming
> for customer/provider alignment.

is well taken. So far the "killer apps" of the packet network are BBSs and
the DXCluster. Perhaps we should be looking harder at what we want this
network to do!

Carl.

--
Carl Makin (VK1KCM)   "Speaking for myself only!"
makinc@hhcs.gov.au   'Work +61 6 289 8443'   Canberra, Australia
'The entire concept of daylight savings time is like trying to make
 yourself taller by cutting off your head and standing on it.' - Usenet Oracle

168. Re: [NETSIG:536] Re: Looking for information.

From: makinc@hhcs.gov.au (Carl Makin)
Date: Tue, 20 Dec 1994 10:02:14 +1100
To: netsig@tapr.org
Message-ID: <199412200013.LAA26009@sserve.cc.adfa.oz.au>
Rendered body type: text/plain

At 10:52 AM 19/12/94 -0600, <kb7uv@panix.com> wrote:
> At 05:18 PM 12/18/94 CST, Carl Makin wrote:

>> ROSE, Netrom (and from what I know of them Texnet and Flexnet) seems aimed
>> at Joe BBSUser. Any other usage is an add-on, an afterthought.

> I can't speak for the other protocols, but ROSE was designed from the
> beginning as X.25 for Amateur Radio, an ISO Level 3 "transperant data pipe".

But it just took a while for PID transparency to be included in the
package. Hey I'm not trying to bag Rose (well... not any more now that
it's grown up <grin>). I just see that Rose, along with netrom and the
others, are being mired in the quagmire that is AX.25 and to do anything
beyond simple data pipe stuff you really have to go to something else.
TCP/IP is one widely available protocol that fills the level4 <-> Level 5
void. TCP/IP also has level 3 functionality that, essentially, duplicates
the functionality of Rose (et al). I don't see the need for the
duplication.

Carl.

--
Carl Makin (VK1KCM)   "Speaking for myself only!"
makinc@hhcs.gov.au   'Work +61 6 289 8443'   Canberra, Australia
'The entire concept of daylight savings time is like trying to make
 yourself taller by cutting off your head and standing on it.' - Usenet Oracle

169. Re: [NETSIG:530] Re: Keyboard to Keyboard obsolete?

From: makinc@hhcs.gov.au (Carl Makin)
Date: Tue, 20 Dec 1994 09:38:30 +1100
To: netsig@tapr.org
Message-ID: <199412200011.LAA25943@sserve.cc.adfa.oz.au>
Rendered body type: text/plain

At 11:20 PM 18/12/94 -0600, <mwhittin@pen.k12.va.us> wrote:
> According to Carl Makin:

>> Keyboard-to-Keyboard is such a small percentage of packet activity that it
>> might as well be obsolete. A Real-Time network has many more users than

> However, if you do not support keyboard-to-keyboard in any
> future network, you are depriving those who DO wish to use key

I'm not advocating removing support for kbd-to-kbd but it can be
categorised as a "real-time" application and supported as such along with
all the other "real-time" applications.

> communication many people enjoy. I enjoy key to key, but I
> also like BBS's and TCP/IP aplications. One reason I do not go
> key to key more often is because everyone around here seems to
> think it's "evil" or taboo or something, and that's the image
> that most people around here propagate!

Well one of the fastest growing facets of packet at the moment is the
converse server network. It's just a glorified kbd-kbd chat system and is
supported by a TCP/IP based network. There is no reason to drop support
for the application but t here are reasons to drop support for the old
methods of doing them.

Carl.

--
Carl Makin (VK1KCM)   "Speaking for myself only!"
makinc@hhcs.gov.au   'Work +61 6 289 8443'   Canberra, Australia
'The entire concept of daylight savings time is like trying to make
 yourself taller by cutting off your head and standing on it.' - Usenet Oracle

170. Re: [NETSIG:547] Re: Looking for information.

From: tmoulton@ram.net
Date: Mon, 19 Dec 94 21:48:52 EST
To: netsig@tapr.org
Message-ID: <06003.15021573@RAMail>
Rendered body type: text/plain

>From: netsig@tapr.org (netsig (tapr))
>Date: Mon, 19 Dec 94 19:43 CST
>Reply-To: netsig@tapr.org
>Sender: netsig@tapr.org
>To: netsig@tapr.org
>Subject: [NETSIG:547] Re: Looking for information.
>
>At 9:16 AM 19/12/94 -0600, tmoulton@ram.net wrote:
>
>> The ARP frames will be sent to all user channels that are configured in th
>e
>> ARP broadcast group, defined in the ROSE switch configuration.
>
>Ok, so you'll bridge ARP frames and rely on the AX.25 autoroute to specify
>the return path. Well that should work. Will it be possible to specify
>ARP broadcast groups based on subnet masks?
>

no, but can you change the destination callsign based upon subnet masks?
>
>Carl.
>
>--
>Carl Makin (VK1KCM)   "Speaking for myself only!"
>makinc@hhcs.gov.au   'Work +61 6 289 8443'   Canberra, Australia
>'The entire concept of daylight savings time is like trying to make
> yourself taller by cutting off your head and standing on it.' - Usenet Orac
>le
>
>

171. Re: [NETSIG:550] Re: Looking for information.

From: tmoulton@ram.net
Date: Mon, 19 Dec 94 21:53:19 EST
To: netsig@tapr.org
Message-ID: <06004.15021573@RAMail>
Rendered body type: text/plain

>others, are being mired in the quagmire that is AX.25 and to do anything
>beyond simple data pipe stuff you really have to go to something else.

That is my point! ROSE IS a data pipe that the End Point User can stuff
anything into, much like a leased line gives you copper which you can stuff
bits into...

_____
Thomas A. Moulton, W2VY
w2vy@ram.net

172. Re: [NETSIG:533] Re: Keyboard to Keyboard obsolete?

From: Barry McLarnon VE3JF <bm@hydra.carleton.ca>
Date: Mon, 19 Dec 1994 22:07:58 -0500 (EST)
To: netsig@tapr.org
Message-ID: <199412200307.WAA17994@hydra.carleton.ca>
Rendered body type: text/plain

Quoth Tom:
> Keyboard to Keyboard died when you couldn't digipeat 100's of miles..
>
> Give people a network where YOU CAN do it and you will see that they WILL!

Absolutely. As Carl has already said, keyboard to keyboard never died, it's
just evolving into new forms. Users around here who don't choose to run TCP/IP
are by no means "locked out" of such activities... they just no longer use
the "digipeater paradigm". As far as I can tell, nobody misses it.

Barry

--
  Barry McLarnon VE3JF/VA3TCP | Internet: bm@hydra.carleton.ca
  Ottawa Amateur Radio Club | AMPRnet: barry@va3tcp.ampr.org
  Packet Working Group | FreeNet: aa187@freenet.carleton.ca

173. Re: [NETSIG:539] Re: Keyboard to Keyboard obsolete?

From: ron@chaos.eng.wayne.edu (Ron Atkinson)
Date: Tue, 20 Dec 1994 01:20:54 -0500 (EST)
To: netsig@tapr.org
Message-ID: <9412200620.AA06149@chaos.NIS.chaos>
Rendered body type: text/plain

My mailer said John Zantek said this:
>
> >>> Keyboard-to-Keyboard is such a small percentage of packet activity that it
> >>> might as well be obsolete.
>
> >Give people a network where YOU CAN do it and you will see that they WILL!
>
[stuff deleted]

> travels our highway as a radio amateur. Yes, we should provide for the
> user who wants to run real-time Mosaic, but shouldn't forget that many
> folks still want to call 'CQ'.

I keep hearing people mention 'what about the keyboard-to-keyboard users?'
Don't forget, if someone is puts up a network capable of running real-time
Mosaic or some other TCP/IP application it very much is far more than
capable of passing keyboard-to-keyboard traffic. Don't complain if someone
puts a label on what their network is being put up for, keyboard chatting
is a very extremely small amount of traffic and that's why people aren't
about to put up a network and say that it's for keyboard-to-keyboard
users. Just put up a real network and it'll support it just fine.

--

Ron Atkinson N8FOW

AMPRnet : n8fow@n8fow.ampr.org
Internet : ron@chaos.eng.wayne.edu
           aa011@detroit.freenet.org

174. RE: [NETSIG:551] Re: Keyboard to Keyboard obsolete?

From: Murphree Michael A <mamurphree@space.honeywell.com>
Date: Tue, 20 Dec 94 08:43:00 PST
To: netsig <netsig@tapr.org>
Message-ID: <2EF707DD@smtpdos.space.honeywell.com>
Rendered body type: text/plain

>Well one of the fastest growing facets of packet at the moment is the
>converse server network. It's just a glorified kbd-kbd chat system and is
>supported by a TCP/IP based network. There is no reason to drop support
>for the application but t here are reasons to drop support for the old
>methods of doing them.

This is like saying we should drop the phone system and all start using
"insert your favorite computer service here" CB simulator... Sorry Carl,
but there are times when I wish to communicate with ONE person, not
an entire group. Should we drop the tty capability from NOS too?

One of the main reason the convers system is popular is because
you reach other geographical areas... something our national network
(where?) can not currently do.

Mike

175. Re: [NETSIG:555] Re: Keyboard to Keyboard obsolete?

From: Peter Laws <plaws@rigel.uark.edu>
Date: Tue, 20 Dec 1994 08:15:18 -0600 (CST)
To: netsig@tapr.org
Message-ID: <Pine.SUN.3.90.941220081210.19383A-100000@rigel.uark.edu>
Rendered body type: text/plain

On Tue, 20 Dec 1994, Ron Atkinson wrote:

On Some Date, Someone else wrote:
> > travels our highway as a radio amateur. Yes, we should provide for the
> > user who wants to run real-time Mosaic, but shouldn't forget that many
> > folks still want to call 'CQ'.
>
> I keep hearing people mention 'what about the keyboard-to-keyboard users?'
> Don't forget, if someone is puts up a network capable of running real-time
> Mosaic or some other TCP/IP application it very much is far more than
> capable of passing keyboard-to-keyboard traffic.

Have you guys never heard of 'talk'???? Or IRC ("I Repeat Class")???
Folks on the internet chat keyboard-to-keyboard all the time. Any
TCP/IP-based network ought to be able to handle these just fine ...

Peter Laws<plaws@comp.uark.edu>|"Suppose you were a politician. Now suppose you
n5uwy@ka5bml.#nwar.ar.usa.noam |were an idiot. Ah, but I repeat myself."-Twain

176. Re: [NETSIG:546] Re: Best Network TNC?

From: Barry McLarnon VE3JF <bm@hydra.carleton.ca>
Date: Tue, 20 Dec 1994 09:56:09 -0500 (EST)
To: netsig@tapr.org
Message-ID: <199412201456.JAA19447@hydra.carleton.ca>
Rendered body type: text/plain

> > I don't want to start a war here, but if you had it to do all over again,
> > what TNC would be best to build a new network. I want to use one "brand" of
> > modem that will fit all applications.
> >
> >   Considerations:
> >
> >   X1J/2
> >   1200 user port
> >   9600 and up network
> >   Power sources
> >   Hill top operation (not in a house)
> >   Standardization
> >   (add your own here)
> >
> > Thanks for your input and thoughts on the subject.
> >
> > Marvin Munster, WB6PKK
> > mmunster@qualcomm.com
>
> Considering you didn't list cost as an objective, the "TNC-3" from
> Germany based on a 68302, is probably the best platform to build from,
> at least on paper. Considering the last I heard of it was in its
> announcement in PSR it would be hard to consider "practical".
>
> Sure would be nice to packet at data rates that would make a '302
> work up a sweat.

Don't forget the Gracilis PackeTen... it's also 68302-based, and it's

available. It would be my first choice for unattended network nodes if
money were no object. Unfortunately, hams who'll spend thousands on a
fancy hf rig tend to balk at putting up, say, 100 bucks for a 10% share
in a P10. I guess they figure that, like the ionosphere, a packet network
will magically materialize for free. Of course, there's also the little
matter of rf equipment, but you get the idea... with a large user base,
the per-user cost could be quite modest, if they actually shared the cost.

Barry

--
  Barry McLarnon VE3JF/VA3TCP | Internet: bm@hydra.carleton.ca
  Ottawa Amateur Radio Club | AMPRnet: barry@va3tcp.ampr.org
  Packet Working Group | FreeNet: aa187@freenet.carleton.ca

177. Re: [NETSIG:549] Re: Keyboard to Keyboard obsolete?

From: "Jay Townsend" <jayt@comtch.iea.com>
Date: Tue, 20 Dec 1994 07:42:50 -0800 (PST)
To: netsig@tapr.org
Message-ID: <m0rK6iA-0000cJC@comtch.iea.com>
Rendered body type: text/plain

> is well taken. So far the "killer apps" of the packet network are BBSs and
> the DXCluster. Perhaps we should be looking harder at what we want this
> network to do!
>
>
> Carl.
>
> --
> Carl Makin (VK1KCM)   "Speaking for myself only!"

Perhaps I am missing something. The DXCluster set up correctly and doing
node-to-node linking is a "lightweight" app. It sends a poll every 8 minutes
and sends DX and WWV spots when appropriate. All in 80 byte packages.

The main program is a "killer app" as currently configured. But not limited
links. There may well be some major changes in the main program that might
even fix the "killer" part of that.

--
Jay Townsend, Ws7i < jayt@comtch.iea.com >

178. N6GN's Higher Speed Packet WWW Page

From: Glenn Elmore <glenne@eagle.sr.hp.com>
Date: Tue, 20 Dec 1994 08:17:36 -0800 (PST)
To: netsig@tapr.org (TAPR netsig)
Cc: tcp-group@ucsd.edu (TCP Group)
Message-ID: <9412201617.AA24127@eagle.sr.hp.com>
Rendered body type: text/plain

I've built a WWW page for some of my higher speed amateur networking
pursuits on:

ftp://col.hp.com/hamradio/packet/n6gn/index.html

Currently it contains papers, information, drawings and schematics
related to

ARRL Conference Papers
900 MHz Antenna Designs
Multi-Megabit Microwave Link
Bit Error Rate Tester
"Layer 3 TNC" Project

I'll try to add to it as I have time.

73
Glenn Elmore n6gn

amateur IP: glenn@SantaRosa.ampr.org
Internet: glenne@sr.hp.com

|--------------- N6GN's Higher Speed Packet WWW Page -------------------|
| |
| ftp://col.hp.com/hamradio/packet/n6gn/index.html |

179. Re: [NETSIG:558] Re: Best Network TNC?

From: Greg Jones <gjones@tenet.edu>
Date: Tue, 20 Dec 1994 11:30:06 -0600 (CST)
To: netsig@tapr.org
Message-ID: <199412201730.LAA06551@Gayle-Gaston.tenet.edu>
Rendered body type: text/plain

According to Barry McLarnon VE3JF:
> > Considering you didn't list cost as an objective, the "TNC-3" from
> > Germany based on a 68302, is probably the best platform to build from,
> > at least on paper. Considering the last I heard of it was in its
> > announcement in PSR it would be hard to consider "practical".
> > Sure would be nice to packet at data rates that would make a '302
> > work up a sweat.
>
> Don't forget the Gracilis PackeTen... it's also 68302-based, and it's
> available. It would be my first choice for unattended network nodes if
> money were no object. Unfortunately, hams who'll spend thousands on a
> fancy hf rig tend to balk at putting up, say, 100 bucks for a 10% share
> in a P10. I guess they figure that, like the ionosphere, a packet network
> will magically materialize for free. Of course, there's also the little
> matter of rf equipment, but you get the idea... with a large user base,
> the per-user cost could be quite modest, if they actually shared the cost.
>

Since this will appear in the upcoming PSR, I thought I might post it here a
little early.

My guess right now without seeing a final parts list is bare baord for
$30-$40, core kit / PCB right at $90+/-, options $10 or so depending on what
they are.

I would be interested in feedback, but this design is coming out to support
the DSP-93 needs, we just had the option to do a little changing to
it in order to make it more versatile. So - please no processor debates :-)

Greg

TAPR TNC-95 (this is to appear in the upcoming PSR)

It would take a long article to describe the thought and effort that has
gone into the design of the TNC-95 as described below. Some of the more
important points that have been discussed over the few months, include the
need to support:

* a low-cost data controller for internal use in the DSP-93.

* future TAPR kits that require data controllers (i.e. PCON, METCON-II,
etc.) for those that want a standalone package.

* networkers who require a low-cost versatile multi-port network controller
that can be used in a variety of situations, but will easily allow for
porting of the existing software base. The concept of channel element or
communications co-processor could be used in some situations.

* a replacement for the TNC-2 bare boards TAPR has been offering since 1991.

* a new OEM design that can be offered by TAPR.

The process of the design began in July 1994 when a survey was conducted
with individuals who had purchased TNC-2 bare boards. This survey was the
results of having to make a decision in regards to having more TNC-2 bare
boards produced. The PCB house had doubled the price and we really wanted
to know if we needed to go to the effort of doing more boards or discontinue
the product. The result was interesting -- 80% of the purchasers were only
building the data controller section for networking and leaving the rest of
the board unpopulated. This seemed to us as a waste of cost to produce a
board that more than 50% was not being used by 80% of the people purchasing
it. Also, at about the same time, the beta-dsp group had determined that a
TNC inside the DSP-93 was going to be required. The decision was made to
discontinue the TNC-2 bare board and to start design of what is now called
the TNC-95.

The TNC-95 is a design that attempts to address a wide variety of needs
without requiring "payment" for unused features. The concept currently is
that the TNC-95 will be available as a bare board, a core kit, and the

additional options that might need to be added later for different functionality. The selection of parts for the unit, should make it easier to find if the builder does not wish to purchase a complete kit from TAPR. Parts procurement for the older TNC-2 bare board was difficult.

The core consists of a Z180 MPU, an 85C30 SCC, an EPROM and two SRAM. The EPROM and SRAM may be any size between 32k x 8 and 512k x 8. The core configuration provides two synchronous ports and two asynchronous ports with TTL level interface.

No modem is provided on-board. The 85C30 will support a variety of speeds to allow a variety of modems to be supported. Since modems are not standard from area to area, it did not make sense to provide modems on the board. In addition, having the modem as an external device promotes the modular approach that this kits strives for. Many times, the modem and radio are tuned to each other, so this can be a benefit to many. No other components are required to add a second modem channel, except the modem.

The TNC-95 is designed in such a manner as to allow it to be configured for either external use or internal (PC Plug-in) use. To get the functionality of an external controller, an external modem (for desired speed) and a MAX232 chip to get RS232 drive levels are added to the core configuration. If you want to use the card as a plug-in to the ISA bus, then instead of adding the MAX232, you add a kit of parts that provides the ISA bus interface. The card looks to the PC like a COM port. Provisions are made to allow I/O port addresses 268H, 278H, 2E8H, 2F8H, 368H, 378H, 3E8H and 3F8H with IRQs of 2, 3, 4, 5, 10, 11, 12, and 15. DMA operation is also supported. Power can be supplied from the ISA backplane or and external 12vdc supply.

The third option that may be added is a second 85C30. This will allow the addition of 2 more external modems. If high-speed RS232 speeds (TBD) are required, then one of the 85C30 ports can be used for that function.

With the above configurations, you can begin to see the potential of this unit. If you are running X1J, THENET, ROSE, or TexNet then no modifications will be required in hardware, since there is enough space for the larger size EPROMS, after code has been ported. In addition, one TNC-95 can replace four TNCs for many that are networking with TNCs. The concept of having the TNC-95 as a channel element for future networking is important. The TNC-95 fills a niche for the 1200-19.2K+ operations and allows other amateur PC boards available to provide higher speed access. No highend limit can be set until the unit is actually finished and tested.

We have been in touch with the developers of code for the TNC-2 and will be contacting them when beta-test units are available for them to port code on. Hopefully we will have a wide range of code available around the introduction.

The TNC-95 will be in prototyping in January. Timeline after that will depend on how the prototype comes out. A small group of beta-testers has already been selected. The goal is to try to have PCBs available sometime by the middle of 1995. More information to follow in a later PSR.

180. Re: [NETSIG:559] Re: Keyboard to Keyboard obsolete?

From: Stu Mitchell <stu@lab.r1.fws.gov>
Date: Tue, 20 Dec 1994 22:34:21 +0000 (GMT)
To: netsig@tapr.org
Message-ID: <Pine.LNX.3.90.941220222835.31470B-100000@ash.lab.r1.fws.gov>
Rendered body type: text/plain

On Tue, 20 Dec 1994, Jay Townsend wrote:

> > is well taken. So far the "killer apps" of the packet network are BBSs and
> > the DXCluster. Perhaps we should be looking harder at what we want this
> > network to do!
>
> Perhaps I am missing something. The DXCluster set up correctly and doing
> node-to-node linking is a "lightweight" app. It sends a poll every 8 minutes
> and sends DX and WWV spots when appropriate. All in 80 byte packages.
>
> The main program is a "killer app" as currently configured. But not limited
> links. There may well be some major changes in the main program that might
> even fix the "killer" part of that.

Speaking of this "killer app," is there a shareware/freeware version of the packet cluster? I know the folks here are looking into setting up a node and the author of the Packet Cluster software is charging $400.

I guess the $400 plus all the associated hardware is a little steep for
the half dozen guys who want to put this up....

Stu Mitchell   stu@lab.r1.fws.gov
USFWS Forensic Lab   mitchellstu@fws.gov
Ashland, Oregon   *** Follow Me! ***

181. Re: [NETSIG:544] Re: Proxim RF modem questions

From: bruce@pixar.com (Bruce Perens)
Date: Tue, 20 Dec 94 15:35 PST
To: dkelly@tomcat1.tbe.com, netsig@tapr.org, netsig@tapr.org
Message-ID: <m0rKE5w-0006DIC@mongo.pixar.com>
Rendered body type: text/plain

I wrote:
> 3. Anyone work out a PC pattern for a board to provide voltage regulation
>   and RS-232 conversion for these things?

David Kelly answered:
> I was working on one, have it roughed out but not verified. Was tossing
> and turning, trying to decide how I wanted to handle the '232 control
> lines. Finally decided to use a single MAX-232 for TxD, RxD, RTS, and CTS.
> Then another for those who just have to have DTR & family. But then I
> thought I'd rather mount the Proxim on the tower and run 150' cable to
> it and RS-422 differential drive would be best....

There are really two applications here. Number 1 is "local" use, where
you want RS-232 and LEDs. Number 2 is remote use, where you want
RS-422, no LEDs, EMI protection, noise filtering, and an RS-422-to-RS-232
board and power-supply fuse at the back of the PC. The answer to your
dilemma is to pick one from items 1 and 2. You can lay out the board for
the other application later. Or you could make foil for both applications
on one board, but that's probably sub-optimal.

Someone asked why I didn't just use a vector board. The modem connector
is not on 0.1 inch centers, so it won't fit in a vector board. Also, the
PC-mounting DB-9 connector has its pins in a zig-zag pattern that won't
fit in a vector board.

> I too was once a pretty good 6502 man. Still have my tools. I don't have
> a PLCC adapter for the Proxim EPROM to read it into a file.

You have more tools than I. I just have a ROM reader/burner, I'd need the
PLCC adaptor, and I'd have to dig up or write a 6502 assembler.

> Keep me on your "Proxim Mailing List". Tell me the answers to my PCB
> dilemma and I'll finish it this year.

OK, you promised...

        Thanks

        Bruce Perens

--
Bruce Perens AB6YM
Voice phone: 510-215-3502 Internet: Bruce@Pixar.com
Amateur Radio TCP/IP: Bruce@ab6ym.ampr.org
Amateur Radio BBS network: ab6ym@n0ary.#nocal.ca.usa.noam

182. Re: [NETSIG:556] Re: Keyboard to Keyboard obsolete?

From: makinc@hhcs.gov.au (Carl Makin)
Date: Wed, 21 Dec 1994 09:40:24 +1100
To: netsig@tapr.org
Message-ID: <199412202350.KAA07615@sserve.cc.adfa.oz.au>
Rendered body type: text/plain

At 7:44 AM 20/12/94 -0600, Murphree Michael A wrote:

>>Well one of the fastest growing facets of packet at the moment is the
>>converse server network. It's just a glorified kbd-kbd chat system and is

> This is like saying we should drop the phone system and all start using
> "insert your favorite computer service here" CB simulator... Sorry Carl,

No I'm not saying that! <grrmph> I'm saying there is no need to keep the
analogue telephone service when you move up to the digital telephone
service. The newer service provides for all the facilities of the old

service and allows more to be offered. That's what a "new and improved"
network should offer.

> but there are times when I wish to communicate with ONE person, not
> an entire group. Should we drop the tty capability from NOS too?

So go to a private channel on the coverse server or connect to the person
direct! Instead of using a dumb terminal hooked to a TNC, use a chat
program running in your GUI based PC. kbd-kbd contacts DO NOT HAVE TO BE
OVER VANILLA AX.25 and, with a little thought by the network designers, you
can still talk to people using vanilla AX.25.

> One of the main reason the convers system is popular is because
> you reach other geographical areas... something our national network
> (where?) can not currently do.

The converse server network is also (nearly :-) real-time! That proves
kbd-kbd is not dead.

Carl.

--
Carl Makin (VK1KCM)   "Speaking for myself only!"
makinc@hhcs.gov.au   'Work +61 6 289 8443'   Canberra, Australia
'The entire concept of daylight savings time is like trying to make
 yourself taller by cutting off your head and standing on it.' - Usenet Oracle

183. Re: [NETSIG:559] Re: Keyboard to Keyboard obsolete?

From: makinc@hhcs.gov.au (Carl Makin)
Date: Wed, 21 Dec 1994 09:44:50 +1100
To: netsig@tapr.org
Message-ID: <199412202350.KAA07619@sserve.cc.adfa.oz.au>
Rendered body type: text/plain

At 9:46 AM 20/12/94 -0600, Jay Townsend wrote:

>> is well taken. So far the "killer apps" of the packet network are BBSs and
>> the DXCluster. Perhaps we should be looking harder at what we want this
>> network to do!

> Perhaps I am missing something. The DXCluster set up correctly and doing
> node-to-node linking is a "lightweight" app. It sends a poll every 8 minutes

A "Killer App" isn't one that kills the network. It's one that makes the
network/facility appealing to a large amount of the user population.
NCSA's Mosaic (and similar WWW clients) are the "Killer Applications" of
the Internet. Not because they destroy the network but because they have
proved popular beyond anyone's wildest dreams.

Carl

--
Carl Makin (VK1KCM)   "Speaking for myself only!"
makinc@hhcs.gov.au   'Work +61 6 289 8443'   Canberra, Australia
'The entire concept of daylight savings time is like trying to make
 yourself taller by cutting off your head and standing on it.' - Usenet Oracle

184. NEW TOPIC! : What about an AX.25 Bridge?

From: makinc@hhcs.gov.au (Carl Makin)
Date: Wed, 21 Dec 1994 09:55:53 +1100
To: netsig@tapr.org, tcp-group@ucsd.edu
Message-ID: <199412202350.KAA07623@sserve.cc.adfa.oz.au>
Rendered body type: text/plain

Since the "Nos is Evil" thread on one of these mailing lists I've been
thinking about how we could provide the local transparant routing required
to decouple local routing from IP subnets.

I've been toying with the idea of a bridge. It would have the advantages
of not requiring any code changes to existing hardware and it would support
ALL Ax.25 based services, not just IP.

There are a number of technical hurdles (such as what do you do with two of
them bridging the same frequencies etc) but it could provide part of the
solution.

The way I see it working is to have a bridge between bit regenerative repeaters.

I know there will probably be idealogical arguments against bridges but
they are a useful tool and might provide some of the functionality we
require! :-)

Any comments?

Carl.

--
Carl Makin (VK1KCM)   "Speaking for myself only!"
makinc@hhcs.gov.au   'Work +61 6 289 8443'   Canberra, Australia
'The entire concept of daylight savings time is like trying to make
 yourself taller by cutting off your head and standing on it.' - Usenet Oracle

185. Brian Kantor's i-net address?

From: mmunster@qualcomm.com (Marvin Munster x5388)
Date: Tue, 20 Dec 1994 17:50:52 -0800
To: netsig@tapr.org
Message-ID: <ab1d39ed2a02100484b0@[129.46.12.181]>
Rendered body type: text/plain

Does anyone have Brian's internet address? Please respond directly, not on
the reflector. Thanks.

Marvin - WB6PKK

mmunster@qualcomm.com

186. Re: [NETSIG:563] Re: Proxim RF modem questions

From: California Wireless Incorporated <cwi@rahul.net>
Date: Tue, 20 Dec 1994 21:57:09 -0800 (PST)
To: netsig@tapr.org
Message-ID: <199412210557.AA16833@bolero.rahul.net>
Rendered body type: text/plain

I thought I'd mention a few things about the Proxim radios. I think you
are talking about the "OEM" radio which is a 2-board stack, each board
being about 4" x 2".

One board is the "TNC" board, the other is the radio.

The "TNC" board (the one with the 6502) is the bottleneck. I think it was
only guaranteed to work to 19.2k

The radios actually work at either 121 kb/s or 242 kb/s; most of the radios
are 242 kb/s.

The interface from the radio is synchronous. I remember that is was a
pretty inexpensive radio, so you had to do certain interesting things.
For example, you had to re-load the PLL Synthesizer's divider register
each time you went from TX to RX, an from RX to TX. This made
turnaround time longer than you would like.

When I worked at GRiD, I build these radios into two products, the GRiDpad
and the Palm Pad. Although I characterized the performance of the radios,
I don't remember enough details on how the interface worked to be of help
here.

Perhaps somebody could contact Proxim? They're in Mt. View, California.

-Mike K3MC

187. Re: [NETSIG:566] NEW TOPIC! : What about an AX.25 Bridge?

From: tmoulton@ram.net
Date: Wed, 21 Dec 94 06:55:35 EST
To: netsig@tapr.org
Message-ID: <06013.15021573@RAMail>
Rendered body type: text/plain

>I've been toying with the idea of a bridge. It would have the advantages
>of not requiring any code changes to existing hardware and it would support
>ALL Ax.25 based services, not just IP.
>
Yes! Fully transparent to AX.25!

You also want to be able to have one bridge entry point be able to route your

traffic out to one of many exit point bridges. You could use a digipeater
field to specify the exit point.

>There are a number of technical hurdles (such as what do you do with two of
>them bridging the same frequencies etc) but it could provide part of the
>solution.

You also need to make sure they properly ID themselves. You could use a
digipeater field to select the bridge you wanted to enter on.

>
>The way I see it working is to have a bridge between bit regenerative repeat
>ers.
>
Exactly, transparent repeaters joined via transparent pipes!

>I know there will probably be idealogical arguments against bridges but
>they are a useful tool and might provide some of the functionality we
>require! :-)

Why most LAN's (coax) are segments of copper joined via bridges!

>
>Any comments?
>
>
>Carl.
>

This is exactly how ROSE works. 8}

It uses a digipeater to specify the local switch you want to use to access
the network, followed by a second digipeater field to specify the exit point
that you wish to use.

____
Thomas A. Moulton, W2VY
w2vy@ram.net

188. Re: [NETSIG:514] ROSE for PC's

From: janderson@ram.net
Date: Wed, 21 Dec 94 08:17:46 EST
To: netsig@tapr.org
Message-ID: <01960.15021591@RAMail>
Rendered body type: text/plain

>Can anyone tell me if ROSE is a PC aplication, and if it is,
>where I can aquire it? (ie FTP sites, or if commercial, who to
>call.) Thanks
>73
>Mark, KE4MAA

Did anyone every reply to this? I'm kind of curious myself...

Jack
n4uls@ram.net

189. Re: [NETSIG:570] Re: ROSE for PC's

From: tmoulton@ram.net
Date: Wed, 21 Dec 94 08:53:07 EST
To: netsig@tapr.org
Message-ID: <06015.15021573@RAMail>
Rendered body type: text/plain

>From: netsig@tapr.org (netsig (tapr))
>Date: Wed, 21 Dec 94 07:21 CST
>Message-Id: <01960.15021591@RAMail>
>Reply-To: netsig@tapr.org
>Sender: netsig@tapr.org
>To: netsig@tapr.org
>Subject: [NETSIG:570] Re: ROSE for PC's
>
>>Can anyone tell me if ROSE is a PC aplication, and if it is,
>>where I can aquire it? (ie FTP sites, or if commercial, who to
>>call.) Thanks
>>73
>>Mark, KE4MAA

>
>
>Did anyone every reply to this? I'm kind of curious myself...
>
>Jack
>n4uls@ram.net

I sent a message to the guy who was working on it and have not gotten a
reply.

tom

190. RE: [NETSIG:571] Re: ROSE for PC's

From: Murphree Michael A <mamurphree@space.honeywell.com>
Date: Wed, 21 Dec 94 10:20:00 PST
To: netsig <netsig@tapr.org>
Message-ID: <2EF8704A@smtpdos.space.honeywell.com>
Rendered body type: text/plain

>I sent a message to the guy who was working on it and have not gotten a
>reply.
>
>tom
>

I think Dennis told me he was taking some vacation until next year when I
saw him last...

Mike

191. Re: [NETSIG:563] Re: Proxim RF modem questions

From: dkelly@nebula.tbe.com (david kelly)
Date: Wed, 21 Dec 94 09:29:32 -0600
To: netsig@tapr.org
Message-ID: <9412211529.AA07411@nebula.tbe.com>
Rendered body type: text/plain

> Someone asked why I didn't just use a vector board. The modem connector
> is not on 0.1 inch centers, so it won't fit in a vector board. Also, the
> PC-mounting DB-9 connector has its pins in a zig-zag pattern that won't
> fit in a vector board.

DB-9? I was thinking DB-25, but DB-9 is fine. I have 4 Proxim radios and
am cocky enough to believe I can lay out a PCB faster than I can wirewrap
4 boards. The cost isn't much different. Then again, there is the effort
to farm out fabrication.

The goofy connector is on 2mm centers. Are your connector pins at a right
angle to the plane of the board, or does it exit out the side?

>> I too was once a pretty good 6502 man. Still have my tools. I don't have
>> a PLCC adapter for the Proxim EPROM to read it into a file.
>
> You have more tools than I. I just have a ROM reader/burner, I'd need the
> PLCC adaptor, and I'd have to dig up or write a 6502 assembler.

Doesn't say that I still remember how to use them. On the other hand I
still have my Apple IIgs and the Merlin assembler/disassembler, and their
manuals. Its been several years since the IIgs was turned on.

Thinking about the advantages of disassembling the Proxim's code, I'm
having trouble with any justification other than, "curiosity". I doubt
there are any enhancements we could make, altho multicast SS datagrams
might be nice. We might answer the UART question too.

I'd like to see a 6502 assembler written in perl. Also think perl would be
great for a PBBS under Linux/Unix.

>> Keep me on your "Proxim Mailing List". Tell me the answers to my PCB
>> dilemma and I'll finish it this year.
>
> OK, you promised...
>
>   Thanks
>
>   Bruce Perens

Ok, if I get shopping done I should have a day before Christmas. Else
there is time between Christmas and New Year's to do it.

So what are we talking about, single sided hobby boards or double sided
plated thru holes? How are we going to fabricate them? Whats the supply
of Proxim boards looking like?

73, David N4HHE
dkelly@nebula.tbe.com

192. Re: [NETSIG:571] Re: ROSE for PC's

From: laborde@kilroy.Jpl.Nasa.Gov (Gregory R. LaBorde)
Date: Wed, 21 Dec 94 08:45:20 PST
To: netsig@tapr.org
Message-ID: <9412211645.AB25808@kilroy.Jpl.Nasa.Gov>
Rendered body type: text/plain

Tom,

I think the question was more "What is ROSE?", not "Is ROSE available for
the PC."

> Can anyone tell me if ROSE is a PC aplication, and if it is,
                    ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
> where I can aquire it? (ie FTP sites, or if commercial, who to
> call.)

I kind of have the same question.

-Greg

--
Gregory R. LaBorde - KD6MSM | Internet: laborde@kilroy.jpl.nasa.gov
Jet Propulsion Laboratory | AMPRNet : kd6msm@jpl-gw.w6vio.ampr.org
Systems Engineering - Galileo OET | Packet : KD6MSM@W6VIO.#SOCA.CA.USA.NA
M/S 264-805 4800 Oak Grove Drive | Phone   : (818) 393-1107
Pasadena, CA 91109 |

193. Re: [NETSIG:574] Re: ROSE for PC's

From: tmoulton@ram.net
Date: Wed, 21 Dec 94 12:41:06 EST
To: netsig@tapr.org
Message-ID: <06024.15021573@RAMail>
Rendered body type: text/plain

>
>Tom,
>
>I think the question was more "What is ROSE?", not "Is ROSE available for
>the PC."
>
>> Can anyone tell me if ROSE is a PC aplication, and if it is,
>   ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
>> where I can aquire it? (ie FTP sites, or if commercial, who to
>> call.)
>
>I kind of have the same question.
>
>-Greg
>
>
>--
>Gregory R. LaBorde - KD6MSM | Internet: laborde@kilroy.jpl.nasa.gov
>Jet Propulsion Laboratory | AMPRNet : kd6msm@jpl-gw.w6vio.ampr.org
>
>Systems Engineering - Galileo OET | Packet : KD6MSM@W6VIO.#SOCA.CA.USA.NA
>
>M/S 264-805 4800 Oak Grove Drive | Phone   : (818) 393-1107
>Pasadena, CA 91109 |
>
>
Greg, You are right!

I will grab one of the Overview files for ROSE and post it...

ROSE is a network protocol stack that runs in TNC's, usually from EPROM.

A replacement for TheNet/NetRom.

The development was started in 1986.

more to follow...

194. Re: [NETSIG:568] Re: Proxim RF modem questions

From: dkelly@nebula.tbe.com (david kelly)
Date: Wed, 21 Dec 94 12:27:41 -0600
To: netsig@tapr.org
Message-ID: <9412211827.AA08073@nebula.tbe.com>
Rendered body type: text/plain

> I thought I'd mention a few things about the Proxim radios. I think you
> are talking about the "OEM" radio which is a 2-board stack, each board
> being about 4" x 2".
>
> One board is the "TNC" board, the other is the radio.
>
> The "TNC" board (the one with the 6502) is the bottleneck. I think it was
> only guaranteed to work to 19.2k
>
> The radios actually work at either 121 kb/s or 242 kb/s; most of the radios
> are 242 kb/s.
>
> The interface from the radio is synchronous. I remember that is was a
> pretty inexpensive radio, so you had to do certain interesting things.
> For example, you had to re-load the PLL Synthesizer's divider register
> each time you went from TX to RX, an from RX to TX. This made
> turnaround time longer than you would like.
>
> When I worked at GRiD, I build these radios into two products, the GRiDpad
> and the Palm Pad. Although I characterized the performance of the radios,
> I don't remember enough details on how the interface worked to be of help
> here.
>
> Perhaps somebody could contact Proxim? They're in Mt. View, California.
>
> -Mike K3MC

So tell me, are they direct-sequence or frequency hopping?

73, David N4HHE
dkelly@nebula.tbe.com

195. Re: [NETSIG:576] Re: Proxim RF modem questions

From: David Bashaw <dbashaw@synoptics.com>
Date: Wed, 21 Dec 94 10:47:53 PST
To: netsig@tapr.org
Message-ID: <9412211847.AA03470@rimbaud>
Rendered body type: text/plain

Perhaps somebody could contact Proxim? They're in Mt. View, California.
>
> -Mike K3MC

So tell me, are they direct-sequence or frequency hopping?

73, David N4HHE
dkelly@nebula.tbe.com

And will they still bet part-15 compliant after the proposed fiddling?
Not trying to be a kill-joy, really I'm not!

73
Dave

196. Re: [NETSIG:574] Re: ROSE for PC's

From: mwhittin@pen.k12.va.us (Mark Christopher Whittington)
Date: Wed, 21 Dec 94 15:00:48 EST
To: netsig@tapr.org
Message-ID: <9412212000.AA116187@pen1.pen.k12.va.us>
Rendered body type: text/plain

According to Gregory R. LaBorde:
> Tom,
>
> I think the question was more "What is ROSE?", not "Is ROSE available for
> the PC."
>

Well, the question was both, really. The networks here run
either Netrom or TCP/IP. So I'm not familiar with ROSE. Any
information would be appreciated.
73
Mark, KE4MAA

--
                              _\\|//_
                             (` 0-0 ')
============================o00==(_)==00o=====================================
Mark Whittington | Co-SysOp, Outpost XIO BBS
Amateur Radio Operator KE4MAA, Tech. | Hampton, VA
mwhittin@pen.k12.va.us Internet | (804)850-0909
KE4MAA@N4HOG.VA.USA.NOAM AX.25 | Sysop: John Winsley
Power through Knowledge | FREE VALIDATION FIRST CALL!
==

197. Proxim RF modem questions

From: bruce@pixar.com (Bruce Perens)
Date: Wed, 21 Dec 94 14:08 PST
To: dkelly@nebula.tbe.com, netsig@tapr.org
Message-ID: <m0rKZCw-00065sC@mongo.pixar.com>
Rendered body type: text/plain

From: dkelly@nebula.tbe.com (david kelly)

> The goofy connector is on 2mm centers. Are your connector pins at a right
> angle to the plane of the board, or does it exit out the side?

Mine is at a right angle to the board, exiting out the bottom. It looks
as if the board is made for a side-exiting connector as well.

> Thinking about the advantages of disassembling the Proxim's code, I'm
> having trouble with any justification other than, "curiosity".

Unless there were a _ton_ of them, in which case I would want technical
details for the radio board, and throw out the TNC board for my own
implementation.

> Ok, if I get shopping done I should have a day before Christmas. Else
> there is time between Christmas and New Year's to do it.

That's good. Did you find a source for the connector? If not, does it make
sense to simply place machined pin sockets in the PC board for that
connector to mate with?

> So what are we talking about, single sided hobby boards or double sided
> plated thru holes? How are we going to fabricate them? Whats the supply
> of Proxim boards looking like?

I think a single-sided board would work - there isn't anything terribly
dense if you use two MAX-232s and a DB-9, and soldering a few jumpers is
a lot less trouble than going to double-sided boards. If we can make the
layout available in PostScript form, we could let people fab their own
single-sided boards using photo-resist - just be sure to put measurement
verification targets on the layout, because some copy machines distort
the sizes of things they are copying.

By the way, what do you use for PC layout software if you don't want to
spend $300?

I don't know anything about the number of these modems available.

        Thanks

        Bruce Perens

--
Bruce Perens AB6YM
Voice phone: 510-215-3502 Internet: Bruce@Pixar.com
Amateur Radio TCP/IP: Bruce@ab6ym.ampr.org
Amateur Radio BBS network: ab6ym@n0ary.#nocal.ca.usa.noam

198. Re: [NETSIG:569] Re: NEW TOPIC! : What about an AX.25 Bridge?

From: makinc@hhcs.gov.au (Carl Makin)
Date: Thu, 22 Dec 1994 09:46:16 +1100
To: netsig@tapr.org

Message-ID: <199412212330.KAA10724@sserve.cc.adfa.oz.au>
Rendered body type: text/plain

<sigh> I should have expected this response. :-)

At 6:04 AM 21/12/94 -0600, tmoulton@ram.net wrote:

>> I've been toying with the idea of a bridge. It would have the advantages

> You also need to make sure they properly ID themselves. You could use a
> digipeater field to select the bridge you wanted to enter on.

That removes the addressing transparency that I was originally interested
in. It also causes timer problems. As far as I'm aware in the US it's not
required to have the transmitting station's callsign in every packet.
Shortly it shouldn't be necessary here in Australia either, just an ID
every 10 minutes or so.

> Why most LAN's (coax) are segments of copper joined via bridges!

Segments of copper can be joined by Repeaters, Bridges or Routers. Each
operates at a different layer and has different functionality. I'm
interested in the functionality of a Bridge. We already have good working
examples of Repeaters and Routers (for IP) but no Bridges for AX.25. Just
as there are occasions where a Bridge is a good solution on ethernet, there
are occasions where a Bridge might be a good solution for problems in
Packet.

> This is exactly how ROSE works. 8}

No it isn't. Rose is not transparent to the Level 2 (ax.25) protocol.

Carl.

--
Carl Makin (VK1KCM)   "Speaking for myself only!"
makinc@hhcs.gov.au   'Work +61 6 289 8443'   Canberra, Australia
'The entire concept of daylight savings time is like trying to make
 yourself taller by cutting off your head and standing on it.' - Usenet Oracle

199. Proxim RF modem questions

From: dkelly@nebula.tbe.com (david kelly)
Date: Wed, 21 Dec 94 17:35:34 -0600
To: netsig@tapr.org
Cc: bruce@pixar.com
Message-ID: <9412212335.AA09088@nebula.tbe.com>
Rendered body type: text/plain

>> The goofy connector is on 2mm centers. Are your connector pins at a right
>> angle to the plane of the board, or does it exit out the side?
>
> Mine is at a right angle to the board, exiting out the bottom. It looks
> as if the board is made for a side-exiting connector as well.

Good. Mine is same.

>> Ok, if I get shopping done I should have a day before Christmas. Else
>> there is time between Christmas and New Year's to do it.
>
> That's good. Did you find a source for the connector? If not, does it make
> sense to simply place machined pin sockets in the PC board for that
> connector to mate with?

Last time I looked DigiKey had them. Individual machined pin sockets may
also work well. It appears the Proxim pins are smaller than the normal
0.025" pins used for most 0.100" spacing, so IC pin sockets may work very
well.

>> So what are we talking about, single sided hobby boards or double sided
>> plated thru holes? How are we going to fabricate them? Whats the supply
>> of Proxim boards looking like?
>
> I think a single-sided board would work - there isn't anything terribly
> dense if you use two MAX-232s and a DB-9, and soldering a few jumpers is
> a lot less trouble than going to double-sided boards. If we can make the
> layout available in PostScript form, we could let people fab their own
> single-sided boards using photo-resist - just be sure to put measurement
> verification targets on the layout, because some copy machines distort
> the sizes of things they are copying.

Actually I was thinking of talking the the board shop that fabricates my daytime stuff. And thinking about the "Quantity (2) 5x7 DS platted thru, $99" guys that advertise in the electronic mags. Wonder how many little boards they will do for that price?

> By the way, what do you use for PC layout software if you don't want to
> spend $300?

Are hams cheap or what? MacDraw works pretty well and is useful for other things. Once Upon A Time I did a 65C02 board with 32k RAM, 32k ROM, (2) 65C22's and a 65C51 in MacDraw II, double sided. Oh boy! Was that a learning experience. One could use just about any drawing package that operates primarily on objects rather than bitmaps. For multilayer, I used MacDraw's layers. One layer for your pads, alignment marks, and board outline, one for top traces, another for bottom. Juggle the views according to what you are working on. When you go to make your final artwork copy the bottom traces and pads to a 2nd sheet, and flip the copy. Also position the copy in the same place on the 2nd sheet as the other is on the 1st sheet in order to duplicate the same printer error in the same places. You want to print a mirror image of the bottom so the image of your work is closest to the copper. If light has to shine thru the mylar you won't get as sharp an image. Also learned not to use a Linotronic 100, its accuracy is only as good as its operator. Linotronic 300's and 500's are self-aligning.

After learning that lesson, in 1989 or 1990 I sampled 5 or 6 ECAD demos for PCs and 2 for Macintosh. Purchased the clear winner, McCAD EDS-2 from Vamp, Inc., (Macintosh). Schematics, PCB, and gerber was $1895.00. Still use upadated version, now on a PowerMacintosh 8100. Golly this thing is great! And its Intel-free. And it sure is great to have a 21" monitor for a PCB, another for the schematic, and a 14" monitor for email. When things get really bad, I can grow the same window 3 monitors wide. Eat your heart out, PC-lovers.

73, David N4HHE
dkelly@nebula.tbe.com

200. Re: [NETSIG:574] Re: ROSE for PC's

From: "Gary McDuffie, Sr." <mcduffie@hannibal.wncc.cc.ne.us>
Date: Wed, 21 Dec 1994 17:10:08 -0700 (MST)
To: netsig@tapr.org
Message-ID: <Pine.3.89.9412211743.A414-0100000@hannibal>
Rendered body type: text/plain

On Wed, 21 Dec 1994, Gregory R. LaBorde wrote:

> Tom,
>
> I think the question was more "What is ROSE?", not "Is ROSE available for
> the PC."
>
> > Can anyone tell me if ROSE is a PC aplication, and if it is,
>   ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
> > where I can aquire it? (ie FTP sites, or if commercial, who to
> > call.)
>
> I kind of have the same question.
>
> -Greg

I assumed he meant "is it available in a BPQ-like application". I would be interested in that too. I would love to run ROSE in place of bpq with FBB to feed a couple of local nodes that I would then be willing to go ROSE on. I tried ROSE years ago and thought it was the way to go. I still think so. The problem is, it won't do much good sitting in the middle of a netrom network. Show me a ROSE tsr to replace BPQ, and I'll certainly try it.

How about it Tom?

Gary

201. Re: [NETSIG:582] Re: ROSE for PC's

From: hank_oredson@MENTORG.COM (Hank Oredson)
Date: Wed, 21 Dec 94 16:34:03 PST
To: netsig@tapr.org
Message-ID: <9412211634.ZM9775@hanko>

Rendered body type: text/plain

On Dec 21, 6:19pm, Gary McDuffie, Sr. wrote:
> Subject: [NETSIG:582] Re: ROSE for PC's
>
>
> On Wed, 21 Dec 1994, Gregory R. LaBorde wrote:
>
> > Tom,
> >
> > I think the question was more "What is ROSE?", not "Is ROSE available for
> > the PC."
> >
> > > Can anyone tell me if ROSE is a PC aplication, and if it is,
> >   ^^^^^^^^^^^^^^^^^^^^^^^^^^^^
> > > where I can aquire it? (ie FTP sites, or if commercial, who to
> > > call.)
> >
> > I kind of have the same question.
> >
> > -Greg
>
> I assumed he meant "is it available in a BPQ-like application". I would
> be interested in that too. I would love to run ROSE in place of bpq with
> FBB to feed a couple of local nodes that I would then be willing to go
> ROSE on. I tried ROSE years ago and thought it was the way to go. I
> still think so. The problem is, it won't do much good sitting in the
> middle of a netrom network. Show me a ROSE tsr to replace BPQ, and I'll
> certainly try it.
>
> How about it Tom?

Second the motion.
A ROSE TSR would be a *very* big marketing advantage.
I'd sure start playing with ROSE were it available as a TSR.

That said, it would need an application interface also ...
BPQHOST would be a viable choice, as much software is already
written to that interface ...

--

Hank Oredson @ Mentor Graphics   Library Operations
Internet   : hank_oredson@mentorg.com   "Parts 'R Us!"
Amateur Radio: W0RLI@W0RLI.OR.USA.NOAM

202. Subscribe

From: Steve@deltabbs.demon.co.uk (Steve K Brown)
Date: Wed, 21 Dec 94 19:27:39 GMT
To: netsig@tapr.org
Message-ID: <1418@deltabbs.demon.co.uk>
Rendered body type: text/plain

How do I subscribe to this list?

Steve
--
#--#
| Steve Brown   Voice: +44 252 546542 Email: steve@deltabbs.demon.co.uk |
| Delta BBS - The Biz! +44 252 546545 Free Access, Echomail, Files etc. |
#--#

203. Re: [NETSIG:584] Subscribe

From: mwhittin@pen.k12.va.us (Mark Christopher Whittington)
Date: Wed, 21 Dec 94 23:17:25 EST
To: netsig@tapr.org
Message-ID: <9412220417.AA120832@pen1.pen.k12.va.us>
Rendered body type: text/plain

According to Steve K Brown:

> How do I subscribe to this list?

Seems like you already did!
Mark

```
--
                              _\\|//_
                             (` 0-0 ')
============================o00==(_)==00o=====================================
Mark Whittington                        | Co-SysOp, Outpost XIO BBS
Amateur Radio Operator KE4MAA, Tech.    | Hampton, VA
mwhittin@pen.k12.va.us  Internet        | (804)850-0909
KE4MAA@N4HOG.VA.USA.NOAM AX.25          | Sysop: John Winsley
*Power through Knowledge*               | FREE VALIDATION FIRST CALL!
================================================================================
```

204. Re: [NETSIG:585] Re: Subscribe

From: bruce@pixar.com (Bruce Perens)
Date: Wed, 21 Dec 94 20:59 PST
To: netsig@tapr.org
Message-ID: <m0rKfcX-00065sC@mongo.pixar.com>
Rendered body type: text/plain

Mail to
LISTSERV@UCSD.EDU with the word "help" in the message and it will tell
you everything about how to subscribe to lists.

        Bruce

--
Bruce Perens AB6YM
Voice phone: 510-215-3502 Internet: Bruce@Pixar.com
Amateur Radio TCP/IP: Bruce@ab6ym.ampr.org
Amateur Radio BBS network: ab6ym@n0ary.#nocal.ca.usa.noam

205. Never mind!

From: bruce@pixar.com (Bruce Perens)
Date: Wed, 21 Dec 94 21:03 PST
To: netsig@tapr.org
Message-ID: <m0rKfh0-00061sC@mongo.pixar.com>
Rendered body type: text/plain

Sorry, I didn't mean to direct that "how to subscribe" answer to the list.
Not to mention that it's incorrect. I'll go back to sleep now.

        Bruce

--
Bruce Perens AB6YM
Voice phone: 510-215-3502 Internet: Bruce@Pixar.com
Amateur Radio TCP/IP: Bruce@ab6ym.ampr.org
Amateur Radio BBS network: ab6ym@n0ary.#nocal.ca.usa.noam

206. Re: Proxim RF modem questions

From: Jeff King <wb8wka@wb8wka.ampr.org>
Date: Thu, 22 Dec 94 01:16:26 UTC
To: netsig@tapr.org
Message-ID: <6736@wb8wka.ampr.org>
Rendered body type: text/plain

dkelly@nebula.tbe.com asked if the Proxims were direct sequence or frequency
hoppers.

They are direct sequence. The proxims are written up in this months nuts and
volts. According to the article, I seem to recall them saying timeline had
800 or so left. The application cited in the article uses them for robot
control.

If your seriously considering the Proxim for a serious application, you
might want to step back and see what else is on the market place. FreeWave
has a box out that is $1250 but according to them gives far more then
10 times the performence of the Proxim. (115kbaud throughput, 20 mile
los range). I'm *not* a spokesman for them, and if I get a pair I'll
post what I think of them here.

Also, a good source for discussion of spread spectrum part 15 products
is the usenet group 'comp.std.wireless'. Its kinda eye opening when
someone complains on that group about '1ms turnaround' as being
slow.

73

Jeff

SMTP   - wb8wka@wb8wka.ampr.org [44.102.16.16] | Operating
Internet - wb8wka@merit.edu , jking@merit.edu | on the edge
AX25   - wb8wka@wu8c.#SEMI.MI.USA.NOAM | of Chaos

207. Re: [NETSIG:570] Re: ROSE for PC's

From: rbiscani@cs.unitn.it (Roberto Biscani)
Date: Thu, 22 Dec 94 08:27:36 +0100
To: netsig@tapr.org
Message-ID: <9412220727.AA00187@mambo.cs.unitn.it>
Rendered body type: text/plain

>>Can anyone tell me if ROSE is a PC aplication, and if it is,
>>where I can aquire it? (ie FTP sites, or if commercial, who to
>>call.) Thanks
>>73
>>Mark, KE4MAA
>
>
>Did anyone every reply to this? I'm kind of curious myself...
>
>Jack
>n4uls@ram.net
>
Yes, it is. Try at ucsd.edu (128.54.16.7) in /hamradio/packet/rose.

>

208. Re: [NETSIG:576] Re: Proxim RF modem questions

From: California Wireless Incorporated <cwi@rahul.net>
Date: Wed, 21 Dec 1994 12:42:43 -0800 (PST)
To: netsig@tapr.org
Message-ID: <199412212042.AA18791@foxtrot.rahul.net>
Rendered body type: text/plain

>So tell me, are they direct-sequence or frequency hopping?

DS

>73, David N4HHE
>dkelly@nebula.tbe.com

209. Re: NEW TOPIC! : What about an AX.25 Bridge?

From: Phil Karn <karn@unix.ka9q.ampr.org>
Date: Thu, 22 Dec 1994 02:12:09 -0800
To: makinc@hhcs.gov.au
Cc: netsig@tapr.org, tcp-group@UCSD.EDU
Message-ID: <199412221012.CAA05729@unix.ka9q.ampr.org>
Rendered body type: text/plain

>I know there will probably be idealogical arguments against bridges but
>they are a useful tool and might provide some of the functionality we
>require! :-)

I considered them a long time ago but concluded that although bridging
is a very useful tool in a LAN environment, they have serious problems
in a random-access RF environment that make them less than workable.

The main problem is that bridges assume full bidirectional
connectivity within each of their subnets. That assumption is inherent
in the way a bridge works; if it hears a packet from an interface
that's destined to another host on the same side, then it takes no
action because it assumes that all hosts on that subnet can hear each
other directly. This assumption clearly doesn't work for simplex
multiple access radio.

Now if you wanted to establish bridges between full duplex repeaters
they would probably work well. But I'm kind of down on repeaters
because of their low spectral efficiency (in terms of bits/sec/hz/sq
km).

Phil

210. Re: [NETSIG:589] Re: ROSE for PC's

From: kb7uv@panix.com (Andrew Funk)
Date: Thu, 22 Dec 1994 05:54:43 -0500
To: netsig@tapr.org, netsig@tapr.org

Message-ID: <199412221054.AA24358@panix.com>
Rendered body type: text/plain

At 01:31 AM 12/22/94 CST, Roberto Biscani wrote:
>>>Can anyone tell me if ROSE is a PC aplication, and if it is,
>>>where I can aquire it? (ie FTP sites, or if commercial, who to
>>>call.) Thanks
>>>73
>>>Mark, KE4MAA
>>
>>
>>Did anyone every reply to this? I'm kind of curious myself...
>>
>>Jack
>>n4uls@ram.net
>>
>Yes, it is. Try at ucsd.edu (128.54.16.7) in /hamradio/packet/rose.

Unless something has changed, the ROSE Switch code at UCSD is *not* the PC
code (which was written by someone other than W2VY), but the TNC EPROM
replacement code... and likely a very old version.

Over the past year I ftp'd newer versions to UCSD, with descriptive text
files as per the upload instructions, but they were never moved from the
incoming directory.

If anyone can suggest a suitable site which accepts anonymous ftp uploads
I'll be happy to place W2VY's code there.

73, Andy
--
  _____________________ Andrew Funk, KB7UV _____________________
 | Tech Producer/Editor   Internet: kb7uv@panix.com |
 | WCBS-TV Channel 2 News   New York, NY USA |
 | --- INSERT COMMERCIAL HERE --- |

211. RE: [NETSIG:592] Re: ROSE for PC's

From: Murphree Michael A <mamurphree@space.honeywell.com>
Date: Thu, 22 Dec 94 08:45:00 PST
To: netsig <netsig@tapr.org>
Message-ID: <2EF9AB56@smtpdos.space.honeywell.com>
Rendered body type: text/plain

>Unless something has changed, the ROSE Switch code at UCSD is *not* the PC
>code (which was written by someone other than W2VY), but the TNC EPROM
>replacement code... and likely a very old version.

Only the TNC code is there now..

>If anyone can suggest a suitable site which accepts anonymous ftp uploads
>I'll be happy to place W2VY's code there.

Current TNC code is available at ftp.lantz.com

Mike

212. Re: [NETSIG:591] Re: NEW TOPIC! : What about an AX.25 Bridge?

From: Klarsen <k5di@acca.nmsu.edu>
Date: Thu, 22 Dec 1994 07:16:15 -0700 (MST)
To: netsig@tapr.org
Message-ID: <Pine.SUN.3.91.941222071055.8268A-100000@kazak>
Rendered body type: text/plain

On Thu, 22 Dec 1994, Phil Karn wrote:

> >I know there will probably be idealogical arguments against bridges but
> >they are a useful tool and might provide some of the functionality we
> >require! :-)
>
> I considered them a long time ago but concluded that although bridging
> is a very useful tool in a LAN environment, they have serious problems

        some deleted....
>
> Now if you wanted to establish bridges between full duplex repeaters
> they would probably work well. But I'm kind of down on repeaters
> because of their low spectral efficiency (in terms of bits/sec/hz/sq
> km).
>

> Phil
>
>
>

        My problem with duplex repeaters has more to do with
bits/sec/dollar/availability and that latter term is what usually defines
whether a duplex repeater is practical. The problem you know is duplexer
cost...

-karl

213. Re: [NETSIG:561] Re: Best Network TNC?

From: Klarsen <k5di@acca.nmsu.edu>
Date: Thu, 22 Dec 1994 07:52:30 -0700 (MST)
To: netsig@tapr.org
Message-ID: <Pine.SUN.3.91.941222074340.8268C-100000@kazak>
Rendered body type: text/plain

The TNC95 from TAPR looks just great! It can be on a mountain
with no rs-232 or other ports, or in my home system working with my DRSI
card (dual 1200 baud modems) and providing the 9600 baud port.

        To Greg: Please make sure the data gets to g8bpq since John
Wiseman can be the switch between my bbs and tcp-ip and the drsi card and
the tnc95 in the "computer card" mode. This will simply be great. To
refresh your memory Greg, the g8bpq "BPQ Switch has been run at 56 kb/s
and should run a lot faster if needed.

-karl k5di

214. Re: [NETSIG:562] Re: Keyboard to Keyboard obsolete?

From: Klarsen <k5di@acca.nmsu.edu>
Date: Thu, 22 Dec 1994 08:06:44 -0700 (MST)
To: netsig@tapr.org
Message-ID: <Pine.SUN.3.91.941222075358.8268D-100000@kazak>
Rendered body type: text/plain

On Tue, 20 Dec 1994, Stu Mitchell wrote:

> On Tue, 20 Dec 1994, Jay Townsend wrote:
>
> > > is well taken. So far the "killer apps" of the packet network are BBSs and
> > > the DXCluster. Perhaps we should be looking harder at what we want this
> > > network to do!
> >
>
>

        I have a real problem with the above thought. What is really the
case is that what most packet hams do for pleasure on the networks is to
use the bbs to go farther than they can with keyboard to keyboard and use
the DX cluster for chasing DX and getting other information.

        We have the bbs and DX Cluster on the same network. The sysops
are good friends and if either see a problem they tell the other and put
up additional nodes on other frequencies, or speed up the nodes or
whatever is needed, consistant with available money. The Home of the DX
Cluster is the location of 2 BPQ Switches (WA5PIE) that are used by my
bbs and keyboard users going to the cluster or the internet gateway. We
all get through and things are working good at the moment.

        If you want to kill packet radio in your area start locking out
these 2 sysops from your node. With that single step your crummy simplex
1200 baud network will be way too fast for the use it now gets!

Merry Christmas de karl k5di

215. Re: [NETSIG:596] Re: Keyboard to Keyboard obsolete?

From: "Jay Townsend" <jayt@comtch.iea.com>
Date: Thu, 22 Dec 1994 07:48:06 -0800 (PST)
To: netsig@tapr.org
Message-ID: <m0rKpkN-0000f2C@comtch.iea.com>
Rendered body type: text/plain

> On Tue, 20 Dec 1994, Stu Mitchell wrote:
>
> > On Tue, 20 Dec 1994, Jay Townsend wrote:

> >
> > > > is well taken. So far the "killer apps" of the packet network are BBSs and
> > > > the DXCluster. Perhaps we should be looking harder at what we want this
> > > > network to do!
> > > >

JUST SO ITS CLEAR. STU WROTE THE ABOVE LINES NOT Jay Townsend.

>   I have a real problem with the above thought. What is really the
> case is that what most packet hams do for pleasure on the networks is to
> use the bbs to go farther than they can with keyboard to keyboard and use
> the DX cluster for chasing DX and getting other information.
>
>   We have the bbs and DX Cluster on the same network. The sysops
> are good friends and if either see a problem they tell the other and put
> up additional nodes on other frequencies, or speed up the nodes or
> whatever is needed, consistant with available money. The Home of the DX
> Cluster is the location of 2 BPQ Switches (WA5PIE) that are used by my
> bbs and keyboard users going to the cluster or the internet gateway. We
> all get through and things are working good at the moment.
>
>   If you want to kill packet radio in your area start locking out
> these 2 sysops from your node. With that single step your crummy simplex
> 1200 baud network will be way too fast for the use it now gets!
>
>
> Merry Christmas de karl k5di
>
Karl, I am the Packetcluster sysop and used to link in the "regular" packet
system before some decided this was a killer application. In fact we are
still totally blocked from going East into Montana.

And you are correct in that they certainly don't get use of our extensive
system which links from Spokane, WA thru Baker Or into Boise Id. Not to
mention the gateways on HF and thru internet.

In my comments I was just trying to set the record straight that the
packetcluster's have very little network impact outside of their own local
node which is busy.

Happy Holidays

--
Jay Townsend, Ws7i < jayt@comtch.iea.com >

216. Re: [NETSIG:596] Re: Keyboard to Keyboard obsolete?

From: makinc@hhcs.gov.au (Carl Makin)
Date: Fri, 23 Dec 1994 09:01:41 +1100
To: netsig@tapr.org
Message-ID: <199412222202.JAA14394@sserve.cc.adfa.oz.au>
Rendered body type: text/plain

I'm starting to regret using the term "killer Application". :-(

At 9:21 AM 22/12/94 -0600, Klarsen wrote:

>   If you want to kill packet radio in your area start locking out

I'm asking what applications do people think packet radio is suited for and
would generate wide interest.

I'm not saying BBSs and DXClusters are network killers.

Carl.

--
Carl Makin (VK1KCM)   "Speaking for myself only!"
makinc@hhcs.gov.au   'Work +61 6 289 8443'   Canberra, Australia
'The entire concept of daylight savings time is like trying to make
 yourself taller by cutting off your head and standing on it.' - Usenet Oracle

217. Re: [NETSIG:598] Re: Keyboard to Keyboard obsolete?

From: Jack Swift <jswift@garnet.msen.com>
Date: Thu, 22 Dec 1994 21:15:01 -0500 (EST)
To: netsig@tapr.org
Message-ID: <Pine.BSI.3.91.941222210349.9748A-100000@garnet.msen.com>
Rendered body type: text/plain

On Thu, 22 Dec 1994, Carl Makin wrote:

> I'm starting to regret using the term "killer Application". :-(
>
> At 9:21 AM 22/12/94 -0600, Klarsen wrote:
>
> >   If you want to kill packet radio in your area start locking out
>
> I'm asking what applications do people think packet radio is suited for and
> would generate wide interest.
>

        Now that we have shifted back to the original question (and i
have had a lot of time to think since i read the first post of it) i have
my $.02 to stuff in:

1. It seems that we are all thinking as radio operators trying to include
computers into our thinking rather that computer operators who have just
had a new type of connection made available to them. I just networked two
computers at work so that i could let my office manager use the
accounting files when i'm playing on the internet or packet. (You have to
get your priorities straight! <g>) Now i'm working on setting up a comm
system for a sled dog race where ARES supplies safety comms from the
snowy woods. If i start by thinking computers/modems/phone lines and then
replace the phone lines with radios i just might find a use for packet.......

2. for just playing, APRS seems to be the nearest thing to Nintendo that
you can get -- the only problem is buying the GPS and getting every node
to include APRS posits in their ID's.

So maybe it's only worth $.01, but i gotta sell something at a profit to
pay for my new radioS.

Jack Swift   jswift@msen.com   N8WAV@W8YY.#UPMI.MI.USA.NOAM
Swift True Value Hardware   402 Shelden Ave. Houghton, MI 49931
Houghton County Amateur Radio Emergency Service
906-482-0530, 0531, 7766   Having fun is Hamming it up!
Marriage is an Institution - Only a Psychologist should be able to commit you.
^^

218. Re: [NETSIG:599] Re: Keyboard to Keyboard obsolete?

From: ron@chaos.eng.wayne.edu (Ron Atkinson)
Date: Thu, 22 Dec 1994 22:50:06 -0500 (EST)
To: netsig@tapr.org
Message-ID: <9412230350.AA14935@chaos.NIS.chaos>
Rendered body type: text/plain

My mailer said Jack Swift said this:
>
> 1. It seems that we are all thinking as radio operators trying to include
> computers into our thinking rather that computer operators who have just
> had a new type of connection made available to them. I just networked two
> computers at work so that i could let my office manager use the
> accounting files when i'm playing on the internet or packet. (You have to
> get your priorities straight! <g>) Now i'm working on setting up a comm
> system for a sled dog race where ARES supplies safety comms from the
> snowy woods. If i start by thinking computers/modems/phone lines and then
> replace the phone lines with radios i just might find a use for packet.......

Exactly... this is the approach that I've been having with packet for a
while now. I left most of the regular packet community because their
purpose for packet was for running a BBS, DX cluster, or something else
similar. Mine was to network my computer and being able to share
information and programs with other people with the same common interest.
Kinda a shame that nearly everyone that wants to do this and actually do
basically has to leave everyone else behind since most people just plain
insist that a new node should go up for BBS use or something and they
just don't understand that packet can also be used exactly like you use
computer networks in an office. The entry for most people into packet
nowadays is to connect to their local BBS and that's all many people
think packet is all about.

> Jack Swift   jswift@msen.com   N8WAV@W8YY.#UPMI.MI.USA.NOAM
> Swift True Value Hardware   402 Shelden Ave. Houghton, MI 49931

Whoa... havn't seen the U.P. in ages! Glad you're still alive up there.

--

Ron Atkinson N8FOW

AMPRnet : n8fow@n8fow.ampr.org
Internet : ron@chaos.eng.wayne.edu
           aa011@detroit.freenet.org

219. Re: [NETSIG:600] Re: Keyboard to Keyboard obsolete?

From: hank_oredson@MENTORG.COM (Hank Oredson)
Date: Fri, 23 Dec 94 10:29:33 PST
To: netsig@tapr.org
Message-ID: <9412231029.ZM11234@hanko>
Rendered body type: text/plain

On Dec 22, 9:54pm, Ron Atkinson wrote:
> Subject: [NETSIG:600] Re: Keyboard to Keyboard obsolete?
> My mailer said Jack Swift said this:
> >
> > 1. It seems that we are all thinking as radio operators trying to include
> > computers into our thinking rather that computer operators who have just
> > had a new type of connection made available to them. I just networked two
> > computers at work so that i could let my office manager use the
> > accounting files when i'm playing on the internet or packet. (You have to
> > get your priorities straight! <g>) Now i'm working on setting up a comm
> > system for a sled dog race where ARES supplies safety comms from the
> > snowy woods. If i start by thinking computers/modems/phone lines and then
> > replace the phone lines with radios i just might find a use for
packet.......
>
> Exactly... this is the approach that I've been having with packet for a
> while now. I left most of the regular packet community because their
> purpose for packet was for running a BBS, DX cluster, or something else
> similar. Mine was to network my computer and being able to share
> information and programs with other people with the same common interest.
> Kinda a shame that nearly everyone that wants to do this and actually do
> basically has to leave everyone else behind since most people just plain
> insist that a new node should go up for BBS use or something and they
> just don't understand that packet can also be used exactly like you use
> computer networks in an office. The entry for most people into packet
> nowadays is to connect to their local BBS and that's all many people
> think packet is all about.

I'm confused by this discussion.

I hear the following:

1. Want to network computers together.

2. Want to do this to be able to share information and programs.

3. Do not want a BBS.

4. Want it to act "just like the office".

However when I watch BBS users, what I see them doing is "sharing
information and programs" in almost exatly the same way we do it
here at the office: email, uuencoded binaries, uuencoded pictures,
online databases, realtime chat services, etc.

Perhaps I missed something here, or perhaps the network in your
part of the country is very very different than the network in
my part of the country.

If what you really mean is "I want tcp/ip and a few specific applications
such as ftp, telnet, and smtp" then I think you are asking the wrong
question: you have jumped right past requirements to implementation.

If you really mean "sharing information and programs", then the tcp/ip
suite of applications is one way to do it. There are many other ways
to to this also, which may be better or worse than the typical tcp/ip
suite. Tell us (authors of the code) what it is you want, and we will
probably supply it - that's what we have been doing for many years now.

Also tell us what you are willing to pay for these applications ...

   ... Hank

--

Hank Oredson @ Mentor Graphics   Library Operations
Internet   : hank_oredson@mentorg.com   "Parts 'R Us!"
Amateur Radio: W0RLI@W0RLI.OR.USA.NOAM

220. Re: [NETSIG:601] Re: Keyboard to Keyboard obsolete?

From: ron@chaos.eng.wayne.edu (Ron Atkinson)
Date: Fri, 23 Dec 1994 18:03:16 -0500 (EST)
To: netsig@tapr.org
Message-ID: <9412232303.AA17264@chaos.NIS.chaos>
Rendered body type: text/plain

My mailer said Hank Oredson said this:
>
>
> I'm confused by this discussion.
>
[stuff deleted]

> However when I watch BBS users, what I see them doing is "sharing
> information and programs" in almost exatly the same way we do it
> here at the office: email, uuencoded binaries, uuencoded pictures,
> online databases, realtime chat services, etc.

You got me confused now. At one time I saw BBS's like this, not now.
They're typically a dumping ground of bulletins that noone want to
read. Even personal messages is hard to do now because sysops
constantly get in the way and interrupt your conversations with
their comments. Right now I only use AX.25 BBS's to send a message
to someone telling them me Internet email address or my amateur
radio TCP/IP address. I'm not impressed with the current BBS's
now anyways, they look about the same as when they came out.

> If what you really mean is "I want tcp/ip and a few specific applications
> such as ftp, telnet, and smtp" then I think you are asking the wrong
> question: you have jumped right past requirements to implementation.
>
> If you really mean "sharing information and programs", then the tcp/ip
> suite of applications is one way to do it. There are many other ways
> to to this also, which may be better or worse than the typical tcp/ip
> suite. Tell us (authors of the code) what it is you want, and we will

You do understand it! The fact remains... we use TCP/IP because it does
what we want. We want to run TCP/IP because it does what need. It is
constantly growing with new and exciting applications and with new
ways to do networking.   You've probably noticed that a whole heck of
a lot of people that run TCP/IP have run regular AX.25 BBS's and NETROM
and other things like this and we don't now, and there's a reason for
this... it's what I described above. Go buy OS/2 now, wait for
WIndows 95, fire up Unix, they all have TCP/IP in them and applications
are using it. We want to run these applications over packet, not use
a simple BBS interface. This is networking here and TCP/IP does it and
the applications fit into it easily. We aren't going back to older
outdated methods regardless of how much someone tries to convince us
that NETROM will rule the world.

> suite. Tell us (authors of the code) what it is you want, and we will
> probably supply it - that's what we have been doing for many years now.

I do believe that the current BBS's do have their part in packet radio
regardless of how you think I feel about them. I just don't see anything
worth while on them, and that's probably because of people not
understanding how to send a message, sysops on ego trips (I think is
the #1 problem) and other misc reasons.   There is one thing that
I think EVERY BBS in the world should do, forward ALL private and
traffic messages immediately. Stick the bulletins on regular forwarding
cycles like what's currently run, but imagine if you type in a message
and it's sent immediately through every BBS (sounds like SMTP, eh? but
just stopping for a moment at each station on the way to get passed onto
the next) how fast a message could be sent across the country. This
should be mandatory for all BBS software.   NOS already does this
right now with TCP/IP, and if you either use the smtp hopper or
you tell it the stations along the way (crude, but it works) you'd
be amazed at how far and how fast a message can go even when you can't
maintain a constant link with the distant end that your're sending a
message too. This is what smtp hopper was written for, passing a
message to the next guy for immediate reforward.

Also how about a sockets interface and port your code to Unix. If I ran
a BBS for packet again I'd rather do it under soemthing like Linux
and have it run as a program in the background and anyone can connect
to it via AX.25 or telnet to it. I'd like to see the JNOS or TNOS
mailbox ripped out of NOS and made a standalone BBS program to run
under Linux. If you wrote your BBS program to do this people would
run itm even if the only reason was "because it's there".

> Also tell us what you are willing to pay for these applications ...

Nothing, this is a hobby. WHen I work on something or write a bit of
code I don't charge anyone or ask for anything. But because I use
TCP/IP I can go out and buy some super wizbang pretty program that
works over a TCP/IP network and I can use it on packet too. Now THAT's
what TCP/IP is about and why it's becoming so popular.

--

Ron Atkinson N8FOW

AMPRnet : n8fow@n8fow.ampr.org
Internet : ron@chaos.eng.wayne.edu
           aa011@detroit.freenet.org

221. Basics

From: WBRADFORD@delphi.com
Date: Fri, 23 Dec 1994 23:20:58 -0500 (EST)
To: netsig@tapr.org
Message-ID: <01HL011V0ODW95NWIL@delphi.com>
Rendered body type: text/plain

What does this message have to do with packet networking? Little,
in an immediate sense. But those with the sensitivity and smarts
to subscribe to this list might appreciate it. If I've pushed
the limits of the list, please email flames to me via private
mail for apologies. Here it is:

Desiderata

          Go placidly amid the noise and haste and remember what
peace there may be in silence. As far as possible without
surrender be on good terms with all persons. Speak your truth
quietly and clearly; and listen to others, even the dull and the
ignorant; they too have their story.

          Avoid loud and aggressive persons, they are vexations
to the spirit. If you compare yourself with others, you may
become vain and bitter; for always there will be greater or
lesser persons than yourself. Enjoy your acheivements as well as
your plans.

          Keep interested in your own career, however humble; it
is a real possession in the changing fortunes of time. Exercise
caution in your business affairs; for the world is full of
trickery. But let this not blind you to what virtue there is;
many persons strive for high ideals; and everywhere life is full
of heroism.

          Be yourself, especially do not feign affection. Neither
be cynical about love; for in the face of all aridity and
disenchantment it is perennial as the grass.

          Take kindly the course of the years, gracefully
surrendering the things of youth. Nurture strength of spirit to
shield you in sudden misfortune. But do not distress yourself
with imaginings. Many fears are born of fatigue and loneliness.
Beyond a wholesome discipline, be gentle with yourself.

          You are a child of the universe, no less than the trees
and the stars; you have a right to be here. And whether or not it
is clear to you, no doubt the universe is unfolding as it should.

          Therefore be at peace with God, whatever you conceive
Him to be, and whatever your labors and aspirations, in the noisy
confusion of life keep peace with your soul.

With all of its sham, drudgery, and broken dreams, it
is still a beautiful world. Be careful; strive to be happy.

Origin:

Some say this text was found in old St. Paul's Church, Baltimore,
Maryland, dated 1692. Others say it written later, maybe in the
1900's. Whatever the source, the message is timeless and revelant
for living today.

One paragraph of the text is reported to have been edited out by
well meaning but ignorant monks:

'Serve thee well thy packet network, for it serves thee...'

73 from Bill K7EA wbradford@delphi.com

222. Seeking tcp/ip etc. data

From: imotion@iu.net (Howard Goldstein)
Date: Sun, 25 Dec 1994 23:14:49 -0500
To: netsig@tapr.org
Message-ID: <199412260350.WAA29444@bb.iu.net>
Rendered body type: text/plain

Bennet Carter, KD4VAAA in Vero Beach, a tcp/ip devotee, asked me to post
this to the net:

 "Where can I find the protocol specs for tcp/ip, ftp, telnet, etc?"

Howie N2WX   imotion@iu.net

223. Inquiry

From: "Victorio O. Ochave" <jojo@asti.dost.gov.ph>
Date: Mon, 26 Dec 1994 16:30:23 +0800
To: netsig@tapr.org
Cc: jojo@christine.asti.dost.gov.ph
Message-ID: <199412260830.QAA09932@christine.asti.dost.gov.ph>
Rendered body type: text/plain

I will be setting up a full TCP/IP radio network here in the Philippines for universities and research institutions. The system will cover mountainous areas , and will even cross bodies of water.

I intend to use TEKK xcvrs and gracilis or pi2 cards for the end nodes. I am still scouting for 50watt UHF (430 - 470) commercial transceivers (PIN diode switched) (non-surplus) that can be used for 9600 baud. It will be used as mountaintop repeaters. I am looking for commercial (ICOM, KENWOOD, YAESU etc.) xcvrs that will require minimal modifications, but will provide reliable performance at 9600.

Can anybody help me on this? Info on distributors or vendors will be greatly appreciated. Advice on hardware matters will also be very welcome.

 TNX in advance!

Victorio A. Ochave, Jr.
Communications Engineering Division
Advanced Science and Technology Institute (ASTI)
Department of Science and Technology (DOST)
4/F NEC Bldg., University of the Philippines
Diliman, Quezon City, PHILIPPINES 1101

voice: 632 995071-9 loc.5106
fax: 632 9224714
Internet: jojo@asti.dost.gov.ph
          victorio.ochave@itu.ch
X.400: G=victorio; S=ochave; P=itu; A=arcom; C=ch

---

224. Windows & FBB

From: daniel.meredith@aznetig.stat.com (Daniel Meredith)
Date: Mon, 26 Dec 1994 06:27:54 GMT
To: netsig@tapr.org
Message-ID: <941225232919381@aznetig.stat.com>
Rendered body type: text/plain

Hi All,
    Yep, I'm about to ask about that horrible thing called WINDOZE!

Unfortunately I have no other choice than to bring up Windows and run
FBB under it. I've run into a problem trying to make BPQ work properly
with it however.

I load BPQ outside of Windows for efficiency reasons. I have 5 radio
ports, one of the ports utilizes a COMM port. Every time I load
windows after running BPQCODE, the COMM port that BPQ is talking to is
taken away by Windows. I am running BPQKISS in POLLED mode so I can
see the very second that Windows takes the COMM port away. Now I can
quit windows and it still does not return. I have to totally re-boot
the machine to make the COMM port active again. I have tried multiple
different changes and can not make it behave, this includes trying other
COMM ports.

Now when I load BPQCODE Inside of the WINDOW under WINDOWS with
APPEL.BAT it works great UNTIL I switch away from the window. I have
BACKGROUND and FOREGROUND set to 100 for attention to the program.
When I switch away the Polling drops to nill and my DRSI CARDS have
extremely long delayed TXDELAY, and the BBS functions incredibly slow.
The very second I switch back to the FOREGROUND the program takes right
off. Note, I am NOT running anything else at the time, just switching
back to MAIN.

System: 486-66Dx2 with 20Megs memory.

Can anyone help here? Am I simply missing something????

Help!

Dan

-----   \---------------/   -----
                    Arizona Network Intertie Group
                "Serving Az's Digital Needs Since 1993"

Daniel J. Meredith - N7MRP   Voice: +1-602-489-7384
P.O. Box 44563   Fax : +1-602-956-2566
Phoenix, Arizona   BBS : +1-602-912-0225
          85064-4563

List Owner: F6fbb-List@AzNetIG.Stat.Com
Arizona Amateur Radio VHF/UHF Digital Coordinator

225. Re: [NETSIG:570] Re: ROSE for PC's

From: WCHAST@delphi.com
Date: Sat, 24 Dec 1994 22:57:44 -0500 (EST)
To: netsig@tapr.org
Message-ID: <01HL1EJKG3BU94F8BI@delphi.com>
Rendered body type: text/plain

Yes there is a version of ROSE that runs in a PC. It supports a added
application, which is the conference bridge based on Brian Lantz code
found in TNOS. And in fact should link to a TNOS conference server, but
I found a bug and have passed it on to Dennis Walker the guy who has been
doing the port.

The PC based version of ROSE presently supports up to 8 ports.

It is somewhat behind the TNC based version in that it is not yet PID
transparent, nor does it report the address at which a error was detected.

I believe that Dennis is working with Tom to get the above limitations
fixed.

Chuck Hast
No Dumb Operating System here, only OS/2. Soon to add LINUX.
Delphi: wchast@delphi.com
AX25 BBS: kp4djt@kp4djt.tpa.fl.usa.noam
ampr.org: kp4djt.ampr.org
AX.121:   3100813077
----

226. Re: [NETSIG:571] Re: ROSE for PC's

From: WCHAST@delphi.com
Date: Sat, 24 Dec 1994 22:58:01 -0500 (EST)
To: netsig@tapr.org
Message-ID: <01HL1EJZPLCG94F8BI@delphi.com>
Rendered body type: text/plain

Tom I think that Dennis is out on vacation, he may not have seen your
msg. if it was sent prior to the 15th.

I have to call him tonite I will tell him.

Chuck Hast
No Dumb Operating System here, only OS/2. Soon to add LINUX.
Delphi: wchast@delphi.com
AX25 BBS: kp4djt@kp4djt.tpa.fl.usa.noam
ampr.org: kp4djt.ampr.org
AX.121:   3100813077
---

227. Re: [NETSIG:592] Re: ROSE for PC's

From: WCHAST@delphi.com
Date: Sat, 24 Dec 1994 22:58:35 -0500 (EST)
To: netsig@tapr.org
Message-ID: <01HL1EKPDNBW94F8BI@delphi.com>
Rendered body type: text/plain

Andy:
Tom's code is presently found at lant.com I think that the 3.5a code is
found there right now.

Chuck Hast
No Dumb Operating System here, only OS/2. Soon to add LINUX.
Delphi: wchast@delphi.com
AX25 BBS: kp4djt@kp4djt.tpa.fl.usa.noam
ampr.org: kp4djt.ampr.org
AX.121:   3100813077
---

228. Re: [NETSIG:594] Re: NEW TOPIC!

From: vodall@mtewe.UUCP
Date: Mon, 26 Dec 1994 20:59:04 -0700 (MST)
To: netsig@tapr.org
Message-ID: <m0rMT3z-0002dKC@mtewe.kevin.mt.us>
Rendered body type: text/plain

I gotta jump in here even if it means disagreeing with Phil... As a
dedicated believer in repeaters being the next best thing to real
digital communications it's my job. :-)

> On Thu, 22 Dec 1994, Phil Karn wrote:
>
> > Now if you wanted to establish bridges between full duplex repeaters
> > they would probably work well. But I'm kind of down on repeaters
> > because of their low spectral efficiency (in terms of bits/sec/hz/sq
> > km).
>
>   My problem with duplex repeaters has more to do with
> bits/sec/dollar/availability and that latter term is what usually defines
> whether a duplex repeater is practical. The problem you know is duplexer
> cost...

A duplexer on 2 meters is an outragous expense. Something that can only
be supported by a large and/or dedicated group. But that's not necessarily
true on 440 or higher.

Besides - why can't we use a little innovation and do something different.
Build a duplex system that runs split-band. Go in on Two meters and come
out on 440. Almost everybody would have an old scanner laying around that
could be used for the receiver. No duplexer would be needed for a system
like that.

Phil, if using a repeater to elminate hidden transmitters gives us
10X or better performance (IMHO) over the chaos of a single frequency mesh
system such as is often the case on 145.010 is poor efficieny, what
should we look at instead that would be better? The normal considerations of
no time, little money, minimal equipment, unaccessible sites, etc. apply...

I believe that replacing the existing store-and-foreward X1J node on our local
mountain top with its 300 mile diameter collection of hidden transmitters
with a 1200 baud regenerating packet repeater will give us by far the
best bang for the buck.

>
> -karl
>

I'd take this one step further and ask what we should do to get around the
ultimate hidden transmitter problem of HF digital communications - but I
haven't read Phil's FEC stuff in QEX yet. :-)

--

Bill

Reply-To: vodall@bigsky.dillon.mt.us
Amateur Packet: wa7nwp@n7see.mt.usa.noam

229. Re: [NETSIG:532] Re: Looking for information.

From: vodall@mtewe.UUCP
Date: Mon, 26 Dec 1994 21:04:24 -0700 (MST)
To: netsig@tapr.org
Message-ID: <m0rMT98-0002dKC@mtewe.kevin.mt.us>
Rendered body type: text/plain

>
> >ROSE, Netrom (and from what I know of them Texnet and Flexnet) seems aimed
> >at Joe BBSUser. Any other usage is an add-on, an afterthought.
>
> ROSE has been designed from the start to provide full AX.25 connectivity,
> without repsect to the upper layer protocol being used.
>
> This is proven by the fact that ROSE passes ALL AX.25 PID's and right now
> I'm working on supporting UI frames to complete the support and while I am
> at it I want to support broadcasting, which can help IP as well as others.
>
> Almost every feature in ROSE in generic for all protocols.
>
> tom
>

Is the PC ROSE source code available? Is the TNC-2 source available?

--

Bill

Reply-To: vodall@bigsky.dillon.mt.us
Amateur Packet: wa7nwp@n7see.mt.usa.noam

230. Hello?

From: mwhittin@pen.k12.va.us (Mark Christopher Whittington)
Date: Tue, 27 Dec 94 12:25:55 EST
To: netsig@tapr.org
Message-ID: <9412271725.AA92550@pen1.pen.k12.va.us>
Rendered body type: text/plain

Has the list died? I haven't gotten anything from it in days!
73
Mark KE4MAA

--
```
                              _\\|//_
                             (` 0-0 ')
============================o00==(_)==00o=====================================
Mark Whittington                      | Co-SysOp, Outpost XIO BBS
Amateur Radio Operator KE4MAA, Tech.  | Hampton, VA
mwhittin@pen.k12.va.us  Internet      | (804)850-0909
KE4MAA@N4HOG.VA.USA.NOAM AX.25        | Sysop: John Winsley
*Power through Knowledge*             | FREE VALIDATION FIRST CALL!
================================================================================
```

231. THEDRAW the program where to FTP it ????

From: Daniel Audet <daudet@LLC.org>
Date: Wed, 28 Dec 1994 07:42:25 -0500 (EST)
To: netsig@tapr.org

Message-ID: <Pine.3.85.9412280725.A25441-0100000@biko.llc.org>
Rendered body type: text/plain

Hi every one, i am looking a place to FTP the programm THEDRAW to make
ANSI color stuff

----
73 de Dan,   ax.25net: VE2PNK@VE2BAR.#QBC.PQ.CAN.NA
                  amprnet: not yet but it's comming
                 internet: daudet@biko.llc.org
                      fax: 418-622-5363
                      tel: 418-622-3238
----

232. TAPR Listserv

From: Greg Jones <gjones@tenet.edu>
Date: Thu, 29 Dec 1994 21:55:55 -0600 (CST)
To: bbssig@tapr.org (BBS SIG mailing), netsig@tapr.org (NETSIG mailing),
        aprssig@tapr.org, tapr-bb@tapr.org (TAPR-BB mailing),
        tapr-board@tapr.org (TAPR Board)
Message-ID: <199412300355.VAA17396@Alice-Thurman.tenet.edu>
Rendered body type: text/plain

Hi TAPR Internet folks.

As you may have noticed, your incoming e-mail box has been filled up with a
batch of mail from the TAPR info server.

During the Xmas holidays and system hosed up and with our sysop gone out of
town it has just now been corrected.

Thanks for the many messages I received letting us know we had a problem.

Shortly we will be moving to our final home and more than one person will
have access to the system, which should allow quicker response to these type
of problems when Lee is unavailable.

I would like to thank Lee, N5LYT for his terriffic support on the system.
Without his help to date, the TAPR info server would not be as well managed
as it is currently.

Happy New Years everyone.

Greg

233. Re: [NETSIG:604] Seeking tcp/ip etc. data

From: mwhittin@pen.k12.va.us (Mark Christopher Whittington)
Date: Fri, 30 Dec 94 0:09:11 EST
To: netsig@tapr.org
Message-ID: <9412300509.AA15279@pen1.pen.k12.va.us>
Rendered body type: text/plain

According to Howard Goldstein:
>
> "Where can I find the protocol specs for tcp/ip, ftp, telnet, etc?"

Do a gopher veronica search or search the web for RFC. These
are documents written to explain just that. There is an index
to these as well, and there are well over 1000 of them on
various subjects. I'll do some research and post some RFC
doccument numbers so you can find what you need.
73
Mark, KE4MAA

--
                              _\\|//_
                             (` 0-0 ')
============================o00==(_)==00o=====================================
Mark Whittington | Co-SysOp, Outpost XIO BBS
Amateur Radio Operator KE4MAA, Tech. | Hampton, VA
mwhittin@pen.k12.va.us Internet | (804)850-0909
KE4MAA@N4HOG.VA.USA.NOAM AX.25 | Sysop: John Winsley
Power through Knowledge | FREE VALIDATION FIRST CALL!
==

234. Re: [NETSIG:604] Seeking tcp/ip etc. data

From: mwhittin@pen.k12.va.us (Mark Christopher Whittington)
Date: Fri, 30 Dec 94 0:34:46 EST
To: netsig@tapr.org
Message-ID: <9412300534.AA126390@pen1.pen.k12.va.us>
Rendered body type: text/plain

According to Howard Goldstein:

> "Where can I find the protocol specs for tcp/ip, ftp, telnet, etc?"
Ok here are a few RFC's you may be interested in:

For telnet: RFC-845 (Telnet protocol description)
For FTP   : RFC-640; RFC 414; RFC-468; RFC-438; RFC-478
For TCP/IP: RFC-1180

This is by no means a complete list. But I hope it helps.
73
Mark, KE4MAA

--
                              _\\|//_
                             (` 0-0 ')
============================o00==(_)==00o=====================================
Mark Whittington | Co-SysOp, Outpost XIO BBS
Amateur Radio Operator KE4MAA, Tech. | Hampton, VA
mwhittin@pen.k12.va.us Internet | (804)850-0909
KE4MAA@N4HOG.VA.USA.NOAM AX.25 | Sysop: John Winsley
Power through Knowledge | FREE VALIDATION FIRST CALL!
==

235. Re: [NETSIG:606] Windows & FBB

From: david@wilson.raider.net (David R. Wilson)
Date: Fri, 30 Dec 1994 00:36:01 -0600 (CST)
To: netsig@tapr.org
Message-ID: <m0rNawT-0005ILC@wilson.raider.net>
Rendered body type: text/plain

Re: Windows behaviour when the task is in the background.

Just my .02 worth...

If the application is acting strangely in the background it may
not have the time slice (whatever that is officially called) set
up high enough for back ground tasks.

Try switching to the Main menu, then the control panel
and go to the 386 enhanced icon. Bump up the setting for the
background priority. See if that works...

My apologies to the list, for the extra noise...

Dave
--
David R. Wilson, WB4LHO
Smyrna, Tennessee USA
INET: david@wilson.raider.net
UUCP: ...!uunet!raider.net!wilson!david

236. Re: [NETSIG:611] Re: Looking for information.

From: tmoulton@ram.net
Date: Fri, 30 Dec 94 06:30:56 EST
To: netsig@tapr.org
Message-ID: <06061.15021573@RAMail>
Rendered body type: text/plain

>Is the PC ROSE source code available? Is the TNC-2 source available?
>
no
>
>Bill
>
>Reply-To: vodall@bigsky.dillon.mt.us
>Amateur Packet: wa7nwp@n7see.mt.usa.noam
>
>

237. Re: [NETSIG:613] THEDRAW the program where to FTP it ????

From: Klarsen <k5di@acca.nmsu.edu>
Date: Fri, 30 Dec 1994 09:00:48 -0700 (MST)
To: netsig@tapr.org
Message-ID: <Pine.SUN.3.91.941230085816.1354C-100000@kazak>
Rendered body type: text/plain

On Thu, 29 Dec 1994, Daniel Audet wrote:

> Hi every one, i am looking a place to FTP the programm THEDRAW to make
> ANSI color stuff
>
>
> --
> 73 de Dan,   ax.25net: VE2PNK@VE2BAR.#QBC.PQ.CAN.NA
>   amprnet: not yet but it's comming
>   internet: daudet@biko.llc.org
>   fax: 418-622-5363
>   tel: 418-622-3238
> --
>
>
>
>
        I have THEDraw and use it on my telephone bbs. Users love changes
in colour. (Down here it's color). Anyway tell me how to get it to you. I
have full intenet privleges.

```
 ******************************************************************************
 *  73, de karl k5di@k5di.nm.usa.na   k5di.ampr.org   k5di@acca.nmsu.edu     *
 *                                                                            *
 *  The only pbbs in Las Cruces, NM     Telephone bbs 1:305/111 Fidonet       *
 *    Using the F6FBB ver 5.15C         Binkley mailer with Maximus 2.12      *
 *                                                                            *
 *        Electrical Engineer with the Army Research Laboratory               *
 *                                                                            *
 ******************************************************************************
```

238. TheDraw Program

From: Klarsen <k5di@acca.nmsu.edu>
Date: Sat, 31 Dec 1994 13:23:32 -0700 (MST)
To: Sig Networking <netsig@tapr.org>
Message-ID: <Pine.SUN.3.91.941231131636.24796B-100000@kazak>
Rendered body type: text/plain

Well tried to get draw.zip on mtlgw.ampr.org but when I did an
anonymous login it allowed me to do NOTHING so the French speaking
Conadians need a translated nos instruction book. I will help by sending
them my tiny ftpusers file that allows ANY user to do things in the
barricaded \public directory....hi

        But then I ftp to ash.lab.r1.fws.gov and did another anonymous
guest login and it allowd me to cd to incoming and d/l draw.zip without a
single problem. Shows you how different a business and ham are.

        Anyhow please do a ftp to the above if you want the file. It will
be there until it is killed....hi

```
 ******************************************************************************
 *  73, de karl k5di@k5di.nm.usa.na   k5di.ampr.org   k5di@acca.nmsu.edu     *
 *                                                                            *
 *  The only pbbs in Las Cruces, NM     Telephone bbs 1:305/111 Fidonet       *
 *    Using the F6FBB ver 5.15C         Binkley mailer with Maximus 2.12      *
 *                                                                            *
 *        Electrical Engineer with the Army Research Laboratory               *
 *                                                                            *
 ******************************************************************************
```

239. Re: [NETSIG:620] TheDraw Program

From: Stu Mitchell <stu@lab.r1.fws.gov>
Date: Sun, 1 Jan 1995 00:37:36 +0000 (GMT)
To: netsig@tapr.org
Message-ID: <Pine.LNX.3.90.950101003416.31215A-100000@ash.lab.r1.fws.gov>
Rendered body type: text/plain

On Sat, 31 Dec 1994, Klarsen wrote:

>
>   But then I ftp to ash.lab.r1.fws.gov and did another anonymous
> guest login and it allowd me to cd to incoming and d/l draw.zip without a
> single problem. Shows you how different a business and ham are.

Karl, thanks for uploading TheDraw program. I moved it to:
pub/pc/utils if anybody else needs it. I'm sure I'll keep it around for a
while. I still have a little space left. hi hi

>
>   Anyhow please do a ftp to the above if you want the file. It will
> be there until it is killed....hi
>
>
>
> **
> * 73, de karl k5di@k5di.nm.usa.na   k5di.ampr.org   k5di@acca.nmsu.edu   *
> *   *
> * The only pbbs in Las Cruces, NM   Telephone bbs 1:305/111 Fidonet   *
> *   Using the F6FBB ver 5.15C   Binkley mailer with Maximus 2.12   *
> *   *
> *   Electrical Engineer with the Army Research Laboratory   *
> *   *
> **

Stu Mitchell   stu@lab.r1.fws.gov
USFWS Forensic Lab   mitchellstu@fws.gov
Ashland, Oregon   *** Follow Me! ***